

FREEDOM OF EXPRESSION

HEARINGS BEFORE THE COMMITTEE ON COMMERCE, SCIENCE, AND TRANSPORTATION UNITED STATES SENATE

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SECOND SESSION

ON

FREEDOM OF EXPRESSION

SEPTEMBER 28, 30, AND NOVEMBER 19, 1982

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FREEDOM OF EXPRESSION

TUESDAY, SEPTEMBER 28, 1982

U.S. SENATE,
COMMITTEE ON COMMERCE, SCIENCE, AND TRANSPORTATION,
Washington, D.C.

The committee met, pursuant to notice, at 9:30 a.m., in room 235, Russell Building, Hon. Bob Packwood (chairman of the committee) presiding.

Staff members assigned to these hearings: Christopher Coursen, Daniel Python, staff counsels; and Thomas Cohen, minority staff counsel.

OPENING STATEMENT BY THE CHAIRMAN

The CHAIRMAN. The hearing will come to order, please.

We are starting today the first of what I expect to be an extensive series of Commerce Committee hearings on the electronic media and the first amendment. We will be looking at freedom of expression as it extends to the electronic media, and more basically as it does not extend to it.

We live in a world of rapid and explosive technological changes. Our Nation's laws cannot be revised fast enough to accommodate these changes, and the future promises to accelerate this process.

The Communications Act of 1934 is perhaps the best example of how far our laws can lag behind technological developments. We are now in the midst of a communications revolution. New methods of transmitting information, or new variations on old methods appear almost daily, yet the policy framework which must somehow absorb and direct these developments is half a century old.

Today's and tomorrow's communications genius must be measured by a policy yardstick that was laid out in the horse and buggy days of the crank telephone, the telegraph key, and the crystal radio. Congress has begun to reexamine and update important aspects of our Nation's communications policy. That work, of course, has not been completed, but the most outdated and troubling facet of our communications policy, one that has not yet been fully reexamined, are those statutes, regulations, and court decisions which restrict the first amendment rights of the electronic media.

The drafters of our Constitution wrote into the Bill of Rights the strongest possible protections for all forms of expression known to them, speech and press. Unfortunately, these guarantees have not kept pace with the growth of new methods of communication. The Congress, the Supreme Court, and the Federal Communications Commission all agree that the electronic media are not fully protected by the first amendment.

The result is that the Government is free to regulate the content of our most numerous and important sources of information. This regulation of the electronic media began in the 1920's with the rise of commercial radio broadcasting. In order to prevent the widespread interference that existed in those early days of radio and because it was thought that the spectrum was scarce, broadcasters were licensed by the Federal Government and obligated to act "in the public interest."

From that obligation has come a host of rules and regulations, including the so-called fairness doctrine and equal time requirements, all of which permit the Government to affect the decisions of the electronic publisher. New communications methods have increased the number of people who can use the spectrum, but restrictions based upon scarcity have not been removed. Instead, these restrictions have expanded with the developments in technology to cover new services such as the soon to arrive direct broadcast satellite service.

Cable television is also subject to these restrictions, despite the fact that there is no scarcity of spectrum in the provision of cable services.

I fear that for reasons of administrative convenience, or because the Government wants to further extend its control over electronic media, other new services will be subject to the same content regulations. The notion that the Government must regulate electronically transmitted information because of spectrum scarcity simply ignores today's reality and tomorrow's promise. Scarcity, or any other rationale which permits the Government to regulate speech and press, must be reexamined.

If we do not begin this reconsideration, we may find ourselves in a nation where first amendment rights are guaranteed to only those messages which are carried by the human voice or the printed press.

I have proposed that we amend our Constitution to guarantee full first amendment rights to the electronic media. I believe that only through an amendment can we completely and permanently protect freedom of expression.

Today's hearing, and the subsequent hearing on Thursday, are the first of a series that will guide us in formulating such an amendment. Today we will focus on communications technology. Because scarcity remains a justification for regulation, we will look at how technological developments are rapidly eliminating that scarcity. We will explore how these developments are permitting better utilization of the spectrum, what new methods of communication are being developed, how this has increased the present number of outlets for information, and what the future is likely to be for an even greater number of outlets.

Thursday's hearings will focus on the policy ramifications of these communications technologies. If technology is eliminating scarcity, as I am convinced it is, we must consider that impact upon the regulation of the content of the media and our most fundamental constitutional rights, guarantees of free speech and press.

These hearings, of course, will not end the inquiry into these issues. They are only the beginning of the process. Our fundamen-

tal rights, however, are too crucial to permit old assumptions to go unchallenged.

Senator GOLDWATER?

Senator GOLDWATER. I have no statement to make at this time.

The CHAIRMAN. We have with us today an illustrious list of witnesses who are well versed in the science of communication. As I indicated, the emphasis today is on the expansion of the technology of communications, on the argument of scarcity as to whether it does or does not exist.

Our first witness is Dr. Solomon J. Buchsbaum, the executive vice president of the Bell Telephone Laboratories in New Jersey. Doctor, it is good to have you with us this morning. Thank you for coming.

**STATEMENT OF DR. SOLOMON J. BUCHSBAUM, EXECUTIVE VICE
PRESIDENT, BELL TELEPHONE LABORATORIES**

Dr. BUCHSBAUM. Thank you, Mr. Chairman.

Well, Mr. Chairman, I appreciate very much this opportunity to be the first witness—

The CHAIRMAN. Please, speak right into that microphone. That is one of the technologies we have not yet surmounted.

Dr. BUCHSBAUM. As I said, I appreciate this opportunity to be the first witness in this first hearing on this very important topic.

As you indicated, my name is Sol Buchsbaum. I am an executive vice president of Bell Laboratories, but more importantly, I am a scientist and an engineer who has spent a career on telecommunications technologies.

These hearings that you are beginning to hold are crucially important. As I say toward the end of my written testimony, we are at a threshold of a new era. It is called the Information Age. And we, scientists and engineers, have an enormous opportunity, because I believe that the information industries which we are now in the process of building have the possibility of being the lynchpin of the American economy, and a key to America's leadership in the world. So, the subject we are dealing with is of enormous importance to our country, to our society.

As you indicated Mr. Chairman, my testimony deals with the technological advances that have made this hearing in fact possible. In your letter of invitation to me to appear at these hearings, you added an attachment in which you have said, and I quote, "Advances in technology have expanded available methods of communications and have increased the total number of outlets by which information may reach the public". Indeed, Mr. Chairman, that is so.

I have prepared a 22-page testimony, but I do not propose to read it, because if I did you would go to sleep and I would go to sleep. Rather, what I would like to do is to take a few minutes to summarize what is in that testimony.

The CHAIRMAN. Doctor, your statement, and those of the other witnesses, will be placed in the record in their entirety. I think that is very important, because this is going to be a very thorough record. You are at liberty to proceed in any manner you wish.

Dr. BUCHSBAUM. Thank you very much.

Well, I make three technical points in my prepared testimony. One is that technology has been opening up new regions of the spectrum that can be used for public communications, and it will continue to do so. I will expand on this point in a minute. The second point is that technology is allowing the spectrum to be used with ever greater efficiency, and will continue to do so. And third, that technology, and especially digital technology, is enabling other electronic transmission media, old media such as cable and wire, and new media such as light guide, to reduce our dependence on the spectrum for public communications.

Then I go on in my testimony to point out that technology is blurring the traditional definitions of communications media as well as the uses to which these media have been put. The press, radio, television, telephony, and various other forms of communication are now still quite distinguishable, but advances in technology will render these media much, much less distinct to the end user, the consumer, you and I in our homes and businesses in the future.

I think it is to the committee's credit that it recognizes that the understanding of the underlying technologies, the potential benefits, limitations, and future challenges, is essential if the public is to realize the benefits of these technologies.

Now, in my first point, the opening up of the spectrum, in my testimony I point out that while we started with AM radio at hundreds of thousands of cycles per second, this has been multiplied to tens of millions, to hundreds of millions, to thousands of millions. Now, in the optical frequencies we are talking about billions of millions of cycles per second, and at each stage of the increased availability of the spectrum, technology has come forth with devices, with techniques to put that spectrum to use.

This is an historical perspective of progress which I believe will continue into the future. Equally important, given the spectrum that has been opened up and allocated for particular functional use, whether it is broadcasting or point to point communication, technology has been allowing that part of the spectrum to be used with ever greater efficiency, and in my testimony I outline several technological, scientific, and engineering-based techniques which enable the ever more effective exploitation of the available spectrum, and I give examples of the number of voice circuits, for example, that can be carried today on a particular microwave radio channel, and contrast that with what was available 10, 20, 30, 40, 50 years ago.

Here, in particular, one has to take note of a revolution that is taking place in the way we handle information. As you know, voice and video signals are analog in nature. When I speak, my voice signal that goes from my mouth to your ears, is analog in nature, resembling what my vocal chords do.

The CHAIRMAN. Now, explain that a little more fully for those of us who are lay persons. When you say analog in nature, what do you mean?

Dr. BUCHSBAUM. Well, the pressure waves that constitute the sound in the air are analogous to the vibration of my vocal chords, and that is the word, analog. It has been coined by scientists to represent that fact.

The CHAIRMAN. So even though you speak into a microphone and that message is transmitted several thousand miles away, that is still analog?

Dr. BUCHSBAUM. That is still analog transmission. Analog transmission is subject to noise, distortion, and so on. One has to spend a tremendous amount of attention technically to preserve the fidelity of the transmission, and people therefore have invented various schemes to accomplish that. Frequency modulation is much more capable of greater fidelity than other forms of analog modulation, but is more costly of spectrum. I will not bore you with technical details, but more recently, it has been realized that with the advancement of integrated circuits, very large-scale integrated circuits, it is possible to convert this analog signal, my voice, to an on-off bit stream of electrical pulses called digits, and to transmit those digits.

Digital transmission is revolutionizing the way information is being handled, stored, disseminated, and so on and so forth, and we are now at the beginning of this digital capability. So, digital techniques will be applied even more so in the future, in fact, to continue this trend toward greater efficiency of utilization of the spectrum.

The third point I am making in the testimony is that technology and here again especially digital technology, the ability to convert all signals into a digital bit stream, is enabling other electronic media, not the ether, not the air, but wire and cable, the old work horses of the transmission business, as well as the new media, lightguides, to reduce our dependence on the spectrum, because they can carry the information from place to place anywhere we want to.

In my testimony, I point out that two advances in particular of how information is being brought today to our homes and businesses are going to be affected by this technological revolution. I point out that our homes and businesses today are connected to the Nation's telecommunications network, the telephone network, by some hundred million pairs of wires. Those pairs of wires today are good primarily for just voice, but with this digital technology, with new electronics placed on those pairs of wires, those pairs of wires can be converted and are being converted so they can carry not just only voice but data as well, including visual information.

Also, I point out that lightguide technology, the ability of light to carry information at enormous capacity, is being installed at an ever greater rate in the telephone network, including paralleling those pairs of wires into people's homes and businesses, and I expect in the next 10 or 20 years this will be a very important mode of transmission into our homes and businesses.

Finally, I point out that because of these technological changes, because of primarily digital technology, because a transmission medium can now handle all kinds of information, voice, data, video, lightguide is a good example—that there is going to be blurring in the way people receive and handle information.

Right now in my home I have a telephone and I have a TV set. Everybody has similar things. In the future, I expect these to merge. How exactly the merging will take place is now being worked on. Technical standards are being set, determined, and so

on and so forth. I expect that during the next few years or so the blurring between the boundaries of electronic media will take place first, followed by blurring between electronic media and the more traditional print media.

The CHAIRMAN. Now, blurring in what sense?

Dr. BUCHSBAUM. Blurring in the sense that while you make a distinction today between a telephone and a TV reception, in the future you will not. You will be dealing with a single instrument that will at your beck and will call provide you with whatever communication capability you wish, video, voice, graphic, a combination of those.

The CHAIRMAN. How does the blurring occur with what we today call newspapers or print?

Dr. BUCHSBAUM. Well, in the future, I expect to be able to receive in my home information which today reaches me only in a print form, but I will get it then on my video screen. I can select a piece of information, a news sportscaster from some newspaper in Chicago and another one from Los Angeles and another one from a different individual that I particularly like. So, I will be able to structure my own menu of information that I will receive whenever I want it.

The CHAIRMAN. You mean you literally can be at home, and if you wake up at 7 in the morning, and you hear there has been a flood in Fresno, Calif., you can punch in "Fresno flood," and out will come something from the Los Angeles Times on your screen covering the flood that night?

Dr. BUCHSBAUM. For example.

The CHAIRMAN. And if you are not happy with it in that form, you can push a button and something will come out of your set at the bottom in a printed form?

Dr. BUCHSBAUM. That is correct.

The CHAIRMAN. In other words, you would have a nationwide communications system at home. If you want to find out about the opening of the pit in Chicago that morning, and what the trades are on wheat or corn, you can enter that request?

Dr. BUCHSBAUM. I can do that.

The CHAIRMAN. You want to find out about the New York Legislature, you can do that. Assuming that the New York Times or some other paper has it ready to go, you can get it at home, and it literally will be a newspaper transmitted either through wires or through the air to your home?

Dr. BUCHSBAUM. That will be technologically possible, and it is not just the access to news, but access to scientific information, access to literary information, access to racing information, or information stored in data bases. The publication will take the form of institutions, entities creating stores of information. We now have over 1,000 such data bases that already can be accessed on a selected basis by those that have very expensive terminals in their businesses, but we are now scratching the surface of it, because if you look at the number of businesses that have that capability, it is only the top industries.

What we would like to find a way to do, and this is where this committee comes in, is to bring this capability into every home and every small business as well, and that will take time. The technol-

ogy is still very expensive, but unlike everything else, the cost of integrated circuits which are making all this possible is coming down even in inflated dollars, never mind real dollars. Technology is putting every year or so twice as much capability in a single chip of silicon than it has the year before, and it is this revolution in electronics technology which is helping to make the kind of information changes possible that I talk about in my testimony.

So, we scientists and engineers, Mr. Chairman, are very excited these days about a prospect opening up before our Nation, because the ability to disseminate and handle information is going to be, as I say in my testimony, I believe, key to our industrial prowess and capability in the next 10 or 20 years.

The CHAIRMAN. Doctor, with this blurred technology where newspapers come into your home almost like television, or practically the same as television, what will happen if the Federal Communications Commission and the courts regard those as electronic in the sense that they now regulate other electronics media? What will be the ramifications for newspapers?

Dr. BUCHSBAUM. Well, first, as I say in my testimony, Mr. Chairman, I do not believe that the printed word on a printed page is going to go away. There is certain ease and flexibility in handling a page, so it will continue. We will continue to use that. I would hope and expect that what you allude to will not happen, that in fact the American people will be able to be trusted and receive whatever information they wish from whatever source, so that I will be free to choose whatever information I wish to receive in my home in whatever form over whatever medium I wish to have, whether it is a pair of wires or an optical fiber or indeed through the air.

The CHAIRMAN. I was not thinking of you at home choosing so much as the person sending it. Today, radio and television and cable, even though cable does not use the allegedly scarce spectrum, are subject to a variety of content regulations. The argument is that they are scarce communications media and therefore the Government must regulate them in the public interest, and in some cases prohibit what they can say, and in some cases compel what they must allow to be said. How would you avoid that practice being extended to newspapers if newspapers start to get their information to a greater number of people the same way that radio or television or cable does?

Dr. BUCHSBAUM. The simplest way, given the great variety of media that are capable of delivering information, that will be capable of delivering information in the future, I really see no reason for controlling anybody from what that person wants to disseminate. I am not sure I understand your question. Perhaps therefore I am not responsive to it.

The CHAIRMAN. Today the Federal Government can control what the broadcast media disseminates if it chooses to do so. The Government claims we own the air, like we own the national forests, and we license who gets to use it, just like we license who can take timber out of the forests. We say that because we own it, we have the right to license it. We will license it in the public interest, and the public interest includes telling stations what they can or cannot say on occasion. What would prohibit the Government from also doing that to newspapers—they cannot do it to newspapers

today—once the newspapers start to reach the point, as you call it, of a blurring in terms of their delivery of information, so that newspapers deliver information in the same way that radio does or television or cable does?

Dr. BUCHSBAUM. Well, what the Government does, of course, I would think is the province of the Congress. As a scientist and engineer, I would trust that Congress will find a way for that not to happen. I would like to be able as a citizen to receive information which is prepared without any restrictions.

The CHAIRMAN. Senator Goldwater?

Senator GOLDWATER. Doctor, this is extremely interesting. In the 60 years I have been in communications, I have been privileged to watch usable frequency go from 200 meters, which we thought was about the lowest we were ever going to get, or the highest, according to how you look at it, to the point that we are now talking about gigahertz, megabits, and what have you. What you have been describing to the chairman as the possibility of being able to pick up your telephone or look into your television set to get the news as you want it—it is already here. Cable news allows me to do this. We do not have cable here in my apartment, but in Arizona I can get news any time, 24 hours a day, keeping me as up to date as I want to be. Within a year or two, the small 2- or 3-foot diameter dish antenna will probably make even cable obsolete, and will allow all American families at a very inexpensive price to gather anything they want to off of a satellite system.

So, everything you have described here I think we can do in some fashion today. In fact, I know of some things that you have been doing up at Bell Laboratories in this whole field. I think we are going to live to see shortly, very shortly, a complete revolution in the use of the telephone, the hot line, as you call it, the open wire. We possibly maybe able to, as I heard discussed once, utilize the frequency, the known frequency ability of the ear and eye to hear and see things without black boxes. I know that is farfetched, but I am convinced that some day that is going to be possible.

I want to congratulate you and Bell Laboratories for what you are doing. I think it is going to be a great contribution to our lives and our way of thinking, and it will make available all news, not just what the editor of a newspaper wants us to see, but everything that is going on. It will allow the American people to be much better informed at, I consider, a much cheaper price.

So I hope you will keep up this work. I expect to live to see quite a bit of this come into being, quite a bit of what you know and I know we are just dreaming about today.

Dr. BUCHSBAUM. Thank you very much, Senator Goldwater. I appreciate your remarks very, very much, sir. Indeed, much that I am talking about is possible and doable today. As you say, you can get 24 hours' worth of news on your cable TV today, but those are news packaged by somebody else for you. I am talking about news that you package for yourself, and that requires a different level of technology, and that will come this decade.

Senator GOLDWATER. That is all I have.

The CHAIRMAN. Senator Pressler?

Senator PRESSLER. First of all, let me join in thanking you for your statement. I have been up to Bell Labs on one or two occa-

sions and enjoyed it very much. However, there are some trends in this whole matter that concern me. One is that some are left out of all the benefits of this great technological revolution we are having presently. In the two places I live, Washington, D.C., and Humboldt, S. Dak., we do not have cable, so I do not get all this news and so forth. I live in two places, the Nation's Capital and in a small town.

Now, that may change with the coming of satellite, and so forth, but the point is the urban poor and pockets of rural people are left out of some of this.

Second of all, I have been concerned about—and again, it is not your problem—the growing media monopoly trend. Certainly, there are several voices, but what if all those voices are saying the same thing? For example, I think it was a couple of weeks ago one of the newspapers here had a seminar on this. They concluded that indeed two or three national newspapers do set the agenda of what is important in international reporting or national reporting, and that is pretty much copied or followed by the various people. So you might have 10 stations reading the AP wire, so you have 10 voices, but they are all saying the same thing, or their source is the same. So we do have a problem with the first amendment in insuring that there are organizations capable of researching and providing a basis for information that is not just being copied. So many people say oh, we have all these new cable stations, we have all these new radio stations, but their sources are all based on the same agenda, and the agenda is set by two or three or four papers. Maybe you have 24 hours of news, but it is copied and nobody challenges the agenda set by a few.

So I think that is something that is not so easily solved just by having more technological means of communication.

I do not know if you want to respond to that.

Dr. BUCHSBAUM. I would like to comment on that. First, to your first point, indeed, I do not know precisely where you live, but I dare say there is a pair of wires coming to your home in South Dakota which provides you with telephone service. As I point out in my testimony, when we put electronics on that pair of wires, you will be able to get in your home in South Dakota not just telephony but quite a few other modern capabilities. You will have 64,000 bits per second available to you.

The CHAIRMAN. When you put what on his wires, Doctor?

Dr. BUCHSBAUM. Electronics. It will be possible for you to use 64,000 bits per second any way you want to. You could get graphics. You can display information on your TV screen and so on and so forth, similar to the trial that Mr. Smith is going to describe, presumably discuss a little later this morning.

So indeed, rural areas, from that point of view, will be no more because every home connected with a pair of wires is going to be able to get what I get in suburban, New Jersey, no different, no more, no less.

As I estimate in my testimony, of the 110 million pairs of wires, 100 million or so by 1990 will have access to that capability if you choose to have it.

Now, your second point is a very good one, I believe. Indeed, most of the people will want to take advantage of what the mass

market disseminates, but the fact of the matter is that in the information business there are small publications that do cater to individual tastes and needs and so on, and electronically, that is possible and doable as well. So if you do not want to in the future do what your neighbors do, then you do not have to, and I dare say we will be innovative enough and forward looking enough to cater to individual tastes.

I certainly do not like what my neighbor likes, and I do not do what therefore he or she does. I go my own way, and I will be able to do that electronically even more than by the use of print.

So I believe there is an opportunity that we should be able to find a way to take advantage of.

Senator PRESSLER. Thank you, Mr. Chairman.

The CHAIRMAN. Doctor, I agree with the conclusion that you stated. If I have learned anything in the last 2 or 3 years in dealing with S. 898, the telecommunications bill we passed, it is that in a legal sense, we probably cannot keep up with the technological advances that you are developing at Bell Labs and the others are developing. For every year that we think we have taken care of something, you outdate us in 6 months. Those of us sitting here cannot, and maybe you cannot, even imagine what communications will be like 15, 20 or 25 years from now. I am continually astounded at what you are able to provide to us.

Dr. BUCHSBAUM. Mr. Chairman, you are exactly right. Scientists and engineers are conservative by nature, and therefore we have always been wrong in the past by underestimating what in fact we create ourselves.

The CHAIRMAN. Any other questions?

Senator GOLDWATER. I will just comment on the type of progress that we have been watching in the last year or 2. I have not told my wife yet because I will probably get shot, but I got her a set of scales yesterday that speaks. She gets on the scales and it says you weigh this much, stop eating, or something like that.

Or we have a little clock that will tell you the time by voice.

I remember at Bell Labs as you were simulating the larynx and the ability to repeat anything that the tester might want. As you give your area code and number now, the operator does not write it down, but the voice is recorded.

So I hate to think of the operator becoming obsolete, but we are also heading in a lot of good directions. That is not one of them. I would like to always be able to think there is a nice girl sitting there listening to my voice, but electronics are moving.

Dr. BUCHSBAUM. Thank you, Mr. Chairman.

[The statement follows:]

STATEMENT OF SOLOMON J. BUCHSBAUM, EXECUTIVE VICE PRESIDENT, BELL
TELEPHONE LABORATORIES

INTRODUCTION

Mr. Chairman and members of the committee: My name is Sol Buchsbaum. I am an executive vice president of Bell Laboratories. I appreciate this opportunity to appear before the committee to present views related to your concern with "Freedom of Expression and the Electronic Media."

Mr. Chairman, in the attachment to the invitation to present this statement you have said that "Advances in technology have expanded available methods of com-

munications, and have increased the total number of outlets by which information may reach the public." Indeed, that is so.

In this testimony, I will make three main points:

(1) Technology has been opening up new regions of the spectrum that can be used for public communications and it will continue to do so;

(2) Technology is allowing the spectrum to be used with ever increasing efficiency; and

(3) Technology, especially digital technology, is enabling other electronic transmission media—old media such as cable and wire and new media such as lightguide—to reduce our dependence on the spectrum for public communications.

I will also point out that technology is blurring the traditional definitions of communications media as well as their uses. The press, radio, television, telephone, and various other forms of electronic communication are now still quite distinguishable. But advances in technology will render these media much less distinct to the end-user—the consumer—in the future.

It is to the committee's credit that it recognizes that an understanding of these technologies—particularly their potential benefits, limitations, and future challenges—is essential if the public is to realize the benefits of these technologies—technologies which are making possible what is called the Information Age.

In this testimony I will describe major technological developments responsible for these changes. Most of my experience has been with point-to-point telecommunications; however, many of the developments in that field have been of a fundamental nature with potential application to broadcast communications.

OPENING UP OF THE RADIO SPECTRUM

Nearly 100 years ago Heinrich Rudolf Hertz began to experiment with electromagnetic waves and some 15 years later (in 1897) Guglielmo Marconi achieved radio communications over distances up to 12 miles. Soon after the turn of the century, reception of radio signals across the Atlantic Ocean was demonstrated and a new communication medium was firmly established. Shortly thereafter physicists began to chart the properties of radio waves and their propagation characteristics as electromagnetic (radio) waves of ever higher frequencies were produced and put to use. By the 1920's physicists had learned which radio waves follow the earth's curvature, which penetrate the lower regions of the ionospheric layers before returning to earth and which follow line-of-sight. Such work continues today except that the electromagnetic waves have wave-lengths measured in centimeters and millimeters rather than in meters and kilometers.

By 1934, when the Communications Act was passed by Congress, broadcast radio and the use of radio for point-to-point communications were firmly established. The frequencies in the 550 to 1600 KHz band had been assigned for domestic AM broadcasting. Transoceanic radio, beginning in the late 1920's, first used the low frequency 60 to 70 KHz band; in the 1930's technology made possible use of the HF band at 10 to 20 MHz.

Microwave radio made its debut in the 1950's first at 4 GHz (TD system) and then at 6 GHz (TH system). Microwave radio is the workhorse of the nation's point-to-point telecommunications network today carrying about two-thirds of all long-distance telephone traffic as well as program radio, television and data.

Additional frequencies have now become available. In addition to TD and TH microwave radio, digital microwave radio is using the 12, 14, and 18 GHz bands. Exploratory work has been underway on systems operating up to 100 GHz for terrestrial transmission over relatively short distances.

Communications satellites use microwave frequencies as well. Current satellites operate at 4 (down) and 6 (up) GHz and at 12 and 14 GHz. The latter have twice the capacity of the former. Developments in solid state electronics will permit the use of the 19 and 28 GHz bands, providing five times the bandwidth of the 4 and 6 GHz satellites; however, these higher frequency bands will encounter problems with rain attenuation and will probably require duplicated ground stations that are spatially diverse. The transmission bandwidth of satellites will increase several fold if the demand develops.

The significant point is that presently, in the early 1980's, we have the devices that permit us to build practical systems in any part of the spectrum we choose—up to and including optical frequencies with their very large bandwidths. We can

expect that in the future technology will provide cheaper, even more effective devices.¹

A similar, though less extensive, growth has taken place in the broadcast spectrum. As I noted, domestic AM broadcast radio has operated in the 550 to 1600 KHz band since the 1920's. FM radio was introduced in the 1930's and used the spectrum between 88 to 108 MHz which permitted 100 channels spaced 200 KHz apart. In the 1940's VHF television was added and opened the frequencies between 54 MHz and 88 MHz. In the 1960's there was the addition of UHF television operating a frequencies between 512 and 806 MHz. Today some pay TV services are transmitting at 10 to 12 GHz.

The examples above demonstrate that technology has allowed increased use of the electromagnetic spectrum.

I should point out that the general allocation of frequency bands to functional categories is a matter of international agreement and domestic laws. These allocations can be changed. For example, the FCC reallocated a portion of the Ultrahigh Frequency (UHF) band that was not being effectively used for television, for which it was allocated, to cellular mobile telephone to satisfy a large, pent-up demand for mobile telephony.

MORE EFFICIENT SPECTRUM UTILIZATION

In addition to the growth of the usable spectrum, we are using the spectrum ever more efficiently. I will first describe some of the techniques that have made this possible and then some of the systems applying these techniques.

Originally, large gaps were left between adjacent channels to prevent mutual interference. However, various technologies and techniques have allowed reduction of the size of these gaps.

Since the frequency bands are allocated for specific functional uses (radio broadcast, television broadcast, common carrier, etc.) one straightforward way to make a particular frequency band available to more users is to reuse the frequencies in that band. The most direct way to accomplish this is to limit the power output of a transmitter as is done in broadcast radio.

Frequency reuse has been particularly effective in the telecommunications network. Hundreds of radio relay stations in the long haul telephone network operate in the 4 GHz and in the 6 GHz bands. This has been possible largely by highly directional antennas so that the radiated power is confined to a narrow beam.

A similar procedure will be used in future satellites. Steerable, highly directive beams will be pointed at particular ground stations in contrast with most present satellites whose wide beams cover the entire continental United States ground area or more. A variation of this technique is currently used in a Westar satellite which has four narrow, but non-steerable, beams. The use of the higher frequencies in satellites will make it easier to provide the narrower, directive beams.

Frequency reuse can also be used to serve an almost unrestricted number of mobile telephone users. In the cellular concept, invented at Bell Laboratories, a given geographical area is divided into cells of a fixed pattern. One of seven sets of frequencies is assigned to each cell and the transmitted power is adjusted to prevent interference between cells using the same set of frequencies. As a vehicle moves from cell to cell, its progress is monitored electronically and the mobile equipment automatically tuned to the proper frequency. As the traffic volume increases, other ground stations, or cells, can be added by reusing the set of frequencies.

Polarization of the electromagnetic wave is also used to increase the capacity of a radio channel. Thus, horizontal and vertical polarizations are currently being used on Comstar satellites to double their channel capacity. Dual polarization is also being considered for use on terrestrial microwave systems to double their capacity.

Time Assignment Speech Interpolation [TASI] takes advantage of the fact that there are gaps in the speech of any one talker so that during the idle periods of a talker another active talker can be assigned to the voice channel. TASI has been used on transoceanic cables and may be used on satellite and terrestrial microwave systems.

¹ This is not to say that we can ignore physical limitations. Directivity at the lower frequencies will still require large antenna structures. Also, above about 10 GHz, some of the bands experience unacceptable levels of attenuation from rainfall and other atmospheric phenomena; however, spaced throughout this region are usable "windows." Optical frequencies, of course, are adversely affected by fog.

I might note at this point the pervasive shift from analog to digital techniques. Digital transmission permits all classes of signals—voice, video or data—to be intermingled and sent on the same digital channel for more efficient use of the channel.

Speech and video signals are inherently analog in nature and historically were transmitted in analog form. However, by the use of digital encoding techniques invented in the 1930's substantial improvements in received signal quality can be realized. Digital coding of voice was first used in the Bell System in the 1960's with the introduction of T-carrier systems. These systems use what is called pulse code modulation [PCM] which, for adequate fidelity, requires a transmission rate of 64 kilobits/second for voice signals.

More sophisticated digital encoding techniques can be used to reduce the amount of bandwidth required. Since the early 1960's there has been a continuing search for cost effective coding methods that can achieve the current transmission objective at lower bit rates.

Some examples of these coding schemes are adaptive differential pulse code modulation [ADPCM] which is being considered in CCITT standards study committees for worldwide telecommunications standards for 32 kilobit/second telephony and shows promise for toll quality transmission of voice signals at one-half the T-carrier rate. More complex algorithms, adaptive predictive coding (APC)² and adaptive transform coding (ATC), for example, may provide toll quality speech transmission at 16 kilobits/second. Economic application of these algorithms will be paced by the development of appropriate integrated circuits.

Digital techniques have not yet been used in broadcasting, either radio or television. A shift toward digital broadcasting will likely take place during the next decade or so simply because of the greater robustness and therefore fidelity of digital signals.

With this brief review of various techniques to use the spectrum more efficiently, I will turn to some examples where they have been applied, singly or together, to achieve higher performance.

When TD microwave radio was first introduced in the 1950's, the system carried 480 voice circuits on each of five channels.³ At that time this was a considerable achievement. Continued technical improvements allow 1800 voice circuits to be carried on a single channel today. For systems operating at 6 GHz, the capacity has grown to 2400 VC/C.

Both TD (4 GHz) and TH (6 GHz) systems use frequency modulation (FM) to carry the voice signal on the microwave beam. Frequency modulation, a robust modulation scheme, is voracious of bandwidth.

Another modulation scheme, AM (amplitude modulation), which uses bandwidth more efficiently than FM, has been used for a long time. One particularly efficient variation, single-sideband transmission (SSB) invented in 1915 by John Carson, an AT&T engineer, has been used widely for amateur radio. Until recently SSB was not used in microwave radio transmission systems because of inherent noise problems. However, with modern technology we are able to overcome the inherent noise problem by using a high-linearity traveling wave tube and by a novel noise-cancellation scheme. The use of these techniques has resulted in a new microwave radio system, called AR6A, which can carry 6,000 voice circuits per radio channel. The AR6A, developed by Bell Labs, went into service in 1980.

Current digital radio systems provide a 94 megabit/second channel or 1344 VC/C for 64 kilobits/second encoded voice. Exploratory work is underway to increase the basic capacity to 135 megabits/second, the voice capacity by a factor of two (using the ADPCM encoding scheme for 32 kilobits/second voice) and the total system capacity by two with dual polarization. The resultant capacity would be 8064 VC/C.

Along with the increases in the number of voice circuits there has been a dramatic reduction in cost. For example, the Bell System's long-haul transmission network in 1940 had 2.8 million circuit miles with an average cost of \$158 per circuit mile. In 1980 there were 513 million circuit miles at a cost of \$11 per circuit mile.

GUIDED TRANSMISSION MEDIA

Next, I will describe technological progress in some of the guided transmission media. The significance of guided media for this discussion is that they may be used

² A variation of this algorithm called linear predictive coding (LPC)—not adequate for high quality telephony—is used in a variety of speech synthesis applications such as the Speak and Spell toy.

³ A microwave radio system consists of one or more channels (C), each having a bandwidth of 20 or 30 MHz depending on the system frequency. Each channel can carry many voice circuits (VC). The number of voice circuit per channel (VC/C) is a measure of performance.

instead of radio systems and, hence, relieve some of the growing pressure on the radio spectrum. For example, the United States today has no HF radio circuits for point-to-point transoceanic telephony; the last of the more than 100 HF radio circuits to Europe were retired in 1975. Undersea cables and satellites, which are more efficient users of the spectrum than HF radio, have replaced the HF circuits.

A millimeter waveguide transmission system has been successfully operated in the network by the Bell System. A fully loaded system could carry 230,000 voice circuits. The system was not deployed because the demand for such capacity did not develop before lightguide systems, which are more attractive, became available.

Coaxial transmission systems are widely used in the telecommunications plant. The capacity of the "L" systems used in the United States has increased from 1,800 voice circuits in 1946 to 108,000 in 1974 with a corresponding reduction in cost per circuit mile. Currently, coaxial systems provide about 20 percent of the circuit miles in the domestic telecommunications network.

The latest development in guided media are the optical fiber systems. The FT3 lightguide system now being installed in the Bell System can carry 40,000 two-way conversations; additional electronics can be added to provide over 150,000 two-way conversations. The initial use of these systems is in the large volume metropolitan and long haul trunks; in the future they will be used in intercontinental cables.

The systems I have described so far have the ability to transmit vast amounts of information of all kinds (program radio, voice, video, data) over long distances. I would like to turn now to the question of getting this information to the end user.

Familiar means of transmitting information to the user are conventional broadcast of radio and television programs. Another familiar broadcast scheme is Cable Television (CATV), using coaxial systems in which the signals are carried directly into subscriber premises. Today about 30 percent of the households in the United States are served by CATV and its use is growing rapidly. In addition to CATV, some pay TV services use microwave radio to broadcast directly to the subscriber's premises.

In contrast with broadcast schemes, access by the individual user to the telecommunications network has been provided by pairs of wires. Today, microelectronics and digital technology, as well as lightguide technology, are changing the amount, and hence the variety, of information that can be transmitted to the user. I will briefly review some of these developments.

The Bell System has used carrier systems on wire pairs for many years in the rural parts of the telecommunications plant. The N-1 analog system introduced in 1950 placed 12 channels on two wire pairs. This was followed by systems with greater capacity. Type ON2 analog systems, for example, carried 24 channels on two wire pairs.

As I noted earlier, the first commercial digital carrier system in the Bell System was T-1, introduced in 1962. The T-1 system uses Pulse Code Modulation, has 24 digital voice channels on two wire pairs and a bit stream of 1.5 megabits/second. This system has been widely deployed in the exchange part of the telecommunications plant.

Today's integrated circuit technology is making it economical to place electronics in the local loop—the pair of wires connecting the telephone subscriber to the telephone company's switching center. The introduction of electronics leads to exciting new capabilities through the use of digital carrier facilities, similar to T-carrier, in the loop. Originally, digital systems were used to reduce the number of physical wire pairs required to serve several customers; now they also provide the means to bring digital transmission directly to the customer premises.

In addition, lightguide systems transmitting at 45 megabits/second per fiber are being introduced into the loop plant; such systems will be used widely in the next decade and the rate will be increased to 90 megabits/second per fiber.

Different kinds of information require different channel capacities. As I noted earlier, through efficient coding techniques voice may be transmitted at 32, or even 16, kilobits/second in contrast with the 64 kilobits/second used in T-carrier. Some other examples are: 56 kilobits/second will provide high quality telephone conversation, facsimile at the rate of one page of print per second, or high quality audio teleconferencing; 156 kilobits/second, and appropriate control and switching, will allow simultaneous transmission on the same loop of high quality voice, of up to 64 kilobits of data for facsimile or computer to computer communications, and of 16 kilobits available for network signaling; 1.5 megabits/second will provide one-way compressed video. With the addition of another pair of wires, two-way video would be available; and 90 megabits/second will make available full action video in color. A pair of optical fibers would allow interactive video.

Although services such as these are not yet widely available, the technology to provide them exists. Their deployment awaits market opportunities and the availability of capital.

In 1970, about 40 million of the 60 million lines in the Bell System could have supported 56 kilobits/second digital capability, and, in 1980, 50 million lines. By 1990, it is expected that as many as 110 million of an expected 130 million lines will have access to 56 or 64 kilobits/second capability.

Advances in microelectronics, digital technology, software and lightwave transmission will increase the bandwidth that can be received in the future. Higher bandwidths will provide more capacity and increase the range of services provided.

In summary, electronics technology today permits use of the electromagnetic spectrum from very low frequencies through the visible spectrum. By using newer devices and techniques the available spectrum has been used ever more efficiently. These developments have resulted in an enormous capacity to transmit information to the public. The choice of the mode of transmission, free space or guided, rests on several factors and to a large extent is determined by the functional objective.

While it is true that the spectrum can be used efficiently, the fact that radio signals can interfere with others on the same frequency cannot be ignored—this is inherent in the medium. Thus, methods for preventing or controlling potential interference must remain. For the spectrum to be fully exploited, control of such things as radiated power, channelization, and signal formats must exist. The spectrum will continue to be a valuable resource to be used judiciously.

THE INTERFACING OF INFORMATION TECHNOLOGIES

The committee has observed that "Advances in technology have expanded available methods of communications, and have increased the total number of outlets by which information may reach the public." To conclude this statement let me comment on some of the potential effects of these new methods of communications.

Today we have information flowing into and out of our homes and businesses via both printed media and electronic media in a variety of ways.

Electronics has provided us with radio and television via broadcast and cable; the telephone network today provides primarily voice and data communications. In addition to different transmission media and services, we have a variety of computer terminals and other machines to record, retrieve, display, process and store information. The latter includes all types of discs, tapes, and other forms of stored memories containing information that can be accessed by a user. The number of databases available to the public has been growing rapidly: there are now some 1200 such databases—triple the number three years ago. They contain an enormous variety of information, from economic statistics, through scientific, medical and legal information, and catalogs of art and literature, to horse racing results. The dramatic reduction in the cost of memories now makes it economical to store entire texts—not just references and abstracts.

On the other hand printed media in all forms continue to thrive. One has only to note the flood of letters, bills, papers, magazines and books which move into our homes and offices every day to realize that electronics has not only not slowed the growth of the printed word, but has aided its wider distribution.

Nevertheless, changes are taking place as a result of the proliferation of the services made possible by the electronic technologies I have described. It is important that the Congress be informed of and consider the potential effects of these changes. My assessment of the course of events is along these lines.

I believe that in the near term the principal effect will be a blurring of the distinction between many of the electronic media themselves. We are currently going through a period when a great many new technologies for transmission, reception, recording, processing, storage, retrieval, and display are being tested and marketed. As a result there is going to be a shakedown period during which the most useful of these will earn the widest public acceptance and the important matters of standards and compatibility are worked out.

If we are to have an information society that truly works—all of these machines will have to be able to understand and talk to each other and the interface between users and the machines will have to permit a "friendly" dialogue. These needs constitute an enormous challenge to those of us in the communications and information business.

At the same time the public will still receive a great amount of information through the printed media. As I suggested before there does not seem to be any slackening in this. Eventually, however, there is no doubt that people will have electronic access, in their businesses and homes, to great amounts of information that

they will be able to obtain and use selectively. The technology will allow them to customize or tailor the information they receive—received at a time of their choosing through either recording and playback or direct access.

For example, a user might be able to subscribe to news or information services databases and obtain selected information to view on their video screen or to print out on hard copy. Thus, customers of such a service could select only the information that meets their own specific interests and have it at a chosen time. (The ability to select content and time of hearing or viewing exists today in audio and video recordings.)

In addition, intelligent computer terminals that combine and display information from several sources will become available. Bell Labs researchers have developed software that permits a standard terminal to combine information from several databases in a single display. This Bell Labs Intelligent Terminal (BLIT) is being used experimentally today for computer-aided design, text editing and other software projects that benefit from multiple, interactive displays.

What is emerging is an alternative to publishing as we think of it today. This alternative will permit the user to select the information wanted and to retrieve it quickly at a time of his choosing. The "publisher" in this sense compiles the database and makes its contents available. As a result of these trends we will probably see the birth of a new Information Age industry that will be a hybrid of the electronic and print media.

There are many indications that this process is already taking place—that such an industry is in the gestation period. As the committee may know, AT&T has been conducting videotext trials with Knight-Ridder and CBS which may be seen as an indication of things to come by bringing the publishing and electronics industries together.

I hope that these views will be of interest to this committee as it pursues concerns about freedom of expression for the new media. I believe it is also important that the committee consider all the possibilities and ramifications of the new technologies to assure that their potential benefits will be available to the public. The Information Age, if it is allowed to develop and flourish, can be an age of incredible economic and social advances. Information industries will be the lynchpin of the American economy and a key to America's leadership in the world. I am certain that the committee recognizes this and will act wisely as it works toward assuring that the nation and its people do indeed enter such an Information Age.

The CHAIRMAN. Doctor, thank you very, very much. It was most helpful.

Next we will take Dr. John V. Harrington, who is the senior vice president for research and development and director of Comsat Laboratories.

Good morning, Dr. Harrington.

As I told Dr. Buchsbaum, your entire statement will be in the record, and you may proceed as you choose.

STATEMENT OF DR. JOHN V. HARRINGTON, SENIOR VICE PRESIDENT, RESEARCH AND DEVELOPMENT, AND DIRECTOR, COMSAT LABORATORIES

Dr. HARRINGTON. Thank you very much.

I am really very pleased to be here to tell you about some of the developments in satellite communications that I think bear on the general problem your committee is addressing.

I will not read my prepared statement, but I would like to pick out two or three of the important points and maybe reiterate those.

First of all, let me say I have two jobs at Comsat. I am Comsat's senior vice president for research and development, and also the director of Comsat Laboratories. From that vantage point I have been able to witness a growth in the satellite communications which has really been spectacular. The traffic in the Intelsat system, which is the major international satellite communication

system, has doubled every 4 years; such that in an 8-year period it is up by a factor of four, and in 12 years by a factor of eight.

The substantial growth in traffic has really sparked a need for the better utilization of the natural resources which we employ in our business, and these are two in kind. First, we have a limited amount of spectrum available to us that we must use efficiently, and second, we have a limited amount of orbit space that we must also use efficiently. There is a limit to how closely you can position satellites along the geosynchronous equator without encountering unexceptionable interference levels.

As the traffic grows and our resources remain limited, we are strongly motivated to be a good deal more clever about the use of those resources to accommodate the demand for capacity.

We have taken two general approaches to the improvement of our satellite capacity. One is in the reuse of spectrum and the second is in bandwidth compression through signal processing. In the early days the communications satellite antenna illuminated the entire disk of the earth.

Today we use a multiplicity of beams from one satellite. We illuminate the North American Continent differently from where we illuminate the European Continent, and so on, and we break that down into north and south segments, as well, and this allows us to reuse the same spectrum on each of those beams without interference, and that allows us to multiply the traffic substantially.

There is also a polarization reuse that is possible. Electromagnetic waves are characterized by preferential direction of vibration, so to speak, such that a wave vibrating in one plane and another wave vibrating in a plane 90° to that, are relatively independent. They both use the same spectrum; they both can be transmitted in the same space without mutual interference; and we make use of that fact to increase our satellite capacity.

The second and equally important approach to more efficient use of the available resources lies in the use of voice and TV bandwidth compression techniques, that is, using techniques to transmit in the spectrum assigned to one voice channel a number of voice channels by taking advantage of either the redundancy or certain predictable characteristics of speech. The same possibilities exist for TV. We are working on systems that will allow us to transmit two and even three TV channels in the spectrum we currently use for one. And this again takes advantage of some of the redundancy in a TV picture or some of the repetition, and some of the things that are predictable about a picture given that you have a history of previous frames.

Today we can multiply the number of voice channels in a given band by at least a factor of 2 or 3, and TV channels by that same factor.

One of the questions that I understand you are addressing is the question of how some of these advances, particularly bandwidth compression and spectrum reutilization, might affect the domestic AM-FM-TV business. I have to point out that our techniques for voice channel multiplication are techniques that apply to large groups of voice channels, not so much to individual channels. We exploit the statistics of large groups of channels which is possible with the kind of wholesale transmission that we do.

In the TV area, the reverse is true. We are working with single channels, and some of those techniques may well be applicable in the future to domestic TV transmission.

Well, those are my general comments, Mr. Chairman. I would be very happy to answer questions.

The CHAIRMAN. Doctor, on Thursday, Prof. Ithiel de Sola Pool will testify. He is a political scientist, not a technician, but in his statement he says, and I am quoting, "Radio broadcasts could be vastly multiplied by taking one UHF-TV channel. There could be hundreds of radio stations in every city."

Is that true?

Dr. HARRINGTON. Well, I am not exactly sure what Dr. Pool had in mind, but let me give you an equivalence number that we use in our business to the effect that 300 voice channels in the spectrum space needed for 1 color TV channel.

The CHAIRMAN. Say that again.

Dr. HARRINGTON. There is an equivalence between 300 voice channels and 1 TV channel in a spectrum sense.

The CHAIRMAN. Does that mean that you could trade 1 UHF-TV channel for 300 voice channels, or thereabouts?

Dr. HARRINGTON. From the point of view of the utilization of spectrum alone, I believe that is true. Now, there may be other factors that are involved in realizing that gain such as available power and the sensitivity of the receiver and so on. But in terms of the use of spectrum, the multiple of 300 applies.

The CHAIRMAN. I am not quite sure I understand your answer. He says hundreds of radio stations. Could there be hundreds more radio stations if we trade in one or two of our UHF channels, many of which we are not using, apparently?

Dr. HARRINGTON. My answer is from the point of view of utilizing the spectrum, available spectrum, the conversion to hundreds of radio stations is real possibility. There are, however, other system factors which must be considered such as the permissible interference levels, and so forth, which one would have to look at before coming to a judgment on the actual multiple. But in terms of the available spectrum, I think what Professor Pool said is true.

The CHAIRMAN. In your testimony, Doctor, you point out that compression, or packing more information within a given amount of spectrum, is one of the techniques for conserving frequencies.

Could this same technique be applied in radio frequency bands?

Dr. HARRINGTON. Well, I tried to say a little earlier that these compression techniques that we use—and as far as I know, that others use as well—apply to groups of voice channels. You need to work with the statistics of 20 or 30 channels in applying these compression techniques. So if there was some way to bundle some of the AM transmissions, then some of these techniques would apply.

The CHAIRMAN. You mentioned a second technique for more effective utilization of the spectrum is reusing the same part of the spectrum two or more times.

Dr. HARRINGTON. Correct.

The CHAIRMAN. Would this technique have any implications for increasing the number of outlets for information that can reach the public?

Dr. HARRINGTON. I think it would when one considers satellite broadcast systems or satellite TV systems. There are some possibilities there for frequency reuse, and perhaps polarization multiplex, using those techniques. But I think for normal FM transmission or for normal AM transmission, I have to say I think it is doubtful.

The CHAIRMAN. You think it is doubtful?

Dr. HARRINGTON. I think it is doubtful.

The CHAIRMAN. Doctor, I do not think I have any more questions.

Fortunately, you have submitted your testimony ahead of time and I had a chance to go through it last Tuesday and again last night. I appreciate it very, very much.

Thank you for coming down.

Dr. HARRINGTON. I am very pleased to be here. Thank you.

[The statement follows:]

STATEMENT OF DR. JOHN V. HARRINGTON, SENIOR VICE PRESIDENT, RESEARCH AND DEVELOPMENT, DIRECTOR, COMSAT LABORATORIES, COMMUNICATIONS SATELLITE CORP.

Mr. Chairman, I am John V. Harrington, Senior Vice President, Research and Development and Director, COMSAT Laboratories. I am pleased to have the opportunity to appear before you to discuss the technologies we are developing at COMSAT Laboratories to keep pace with the increasing demand for new communications satellite services.

When the first INTELSAT satellite was launched in 1965, few could have predicted the remarkable growth we have witnessed in the telecommunications industry. The capacity of the satellites used by INTELSAT has increased from Early Bird's 240 simultaneous voice circuits in 1965 to the 12,000 voice circuits now provided by each INTELSAT V satellite. The INTELSAT global communications network now comprises 16 operational satellites, 5 of which are devoted solely to INTELSAT traffic. Total system capacity now exceeds 40,000 circuits. Message, telephone, telex, data, television and audio programs are carried over more than 1000 pathways linking 315 earth stations in 136 nations and territories.

With a greater variety of services available at reduced costs, the demand for satellite capacity has increased. There are now 22 separate operational communications satellite systems worldwide, with a combined commercial revenue approaching \$2 billion per year.

As launch capabilities have improved, larger, more powerful spacecraft have been developed to operate with smaller, less costly earth terminals. As this trend continues, there will be an even greater proliferation of specialized satellite services. Two such services are satellite-to-home pay television and satellite linked business communications networks.

The expansion of existing services and the creation of new ones will place a heavy demand on the already congested radio frequency spectrum. In order to alleviate this congestion, COMSAT Laboratories has contributed to the development of several technologies to enable us to make the maximum utilization of critical frequency resources. The techniques for achieving frequency conservation fall into two major groups. The first makes use of compression, or packing more information within a given increment of spectrum. The second embodies means for reusing the same increment of spectrum two or more times. Both techniques can be used at the same time, resulting in remarkable improvements in the efficiency of spectrum utilization.

DIGITAL DATA COMPRESSION TECHNIQUES

Although means for compressing information such as voice, data and radio in its more usual analog form have been used for some time, dramatic progress in compression techniques arrived with the digital communications era.

Digital communications using data compression techniques have resulted in greatly increased useful capacity of satellite transponders. Conventional analog communications, even with compression, requires that the bulk of an original voice or video picture signal be transmitted to the receiver. However, it is not necessary to transmit all parts of a signal in order to recreate a high quality voice or video signal for the receiver. Digital techniques can be used for selecting and transmitting only the critical elements of a signal which are sufficient to reconstruct a facsimile of the

voice or picture at the receiving end virtually indistinguishable from the original. In most cases, the fact that the signal has undergone digital processing is imperceptible to those at the receiving end.

COMSAT Laboratories has developed several methods of data compression which conserve the spectrum resource. One of these is the Speech Predictive Encoding Communications System [SPEC]. In normal telephone communications, generally one party speaks while the other is listening. Therefore, each of the two 1-way channels of a long-distance circuit is actively in use less than half of the time. Even when a channel is in use, pauses between words, changes in inflection, and hesitation occur in normal speaking habits. The existence of idle channel periods was long recognized and, in the late fifties, speech interpolation techniques which enabled channel reassignment during such idle periods were introduced. Such techniques almost doubled effective channel capacity. SPEC is a digital speech interpolation device which permits increased channel efficiency by not only using idle channel periods, but eliminating the transmission of redundant, or predictable, speech samples. A redundant speech sample is one that is essentially the same as its immediate predecessor sample. The SPEC transmitter senses the redundant sample and does not transmit it. When the SPEC receiver, which has stored the immediate predecessor sample, senses the absence of an expected transmission, it supplies the missing signal by repeating the stored sample. In addition to effectively multiplying channel capacity by a factor of two or more, the SPEC system also eliminates speech clipping, or the loss of words or parts of words, which for more conventional systems occurs when the total demand for speech channel time exceeds that which can be supplied by the available channel capacity. The SPEC system allows for a graceful degradation in signal quality during heavy demand which is imperceptible to the user. Despite its sophisticated performance, SPEC is a simple and relatively low cost method of achieving circuit multiplication. Other techniques similar in performance to SPEC have been devised by other laboratories and are being used increasingly in satellite circuits.

Digital compression techniques have also been developed for television transmissions. One of these systems is DITEC, developed by COMSAT Laboratories. It is capable of doubling the capacity of present satellite television services using existing commercial satellites and earth stations, while reducing transmission costs. The DITEC system converts standards television transmission video and audio signals into digital form. By using special sampling and filtering techniques, the number of information bits necessary to reconstruct the signal at the receiving end is greatly reduced, thus reducing in turn the costs of transmission and conserving channel capacity. The receiving station can choose to reconstruct the compressed digital video signal to local standards, such as those used in Europe.

TIME DIVISION MULTIPLE ACCESS [TDMA]

Another technique for increasing satellite capacity when more than one earth station uses a satellite transponder is time division multiple access [TDMA]. TDMA is a means to permit several earth stations to time share the entire bandwidth and power of a transponder. Each earth station in a TDMA network transmits voice and video information grouped in the form of short digital bursts. Each earth station's burst is transmitted to arrive at the satellite transponder at a specified time so as not to "overlap" and interfere with another station's burst. Receiving earth stations decode the bursts and reconstruct the original signal for further transmission via terrestrial facilities. TDMA also permits the flexible interconnection of small traffic streams upon demand. This results in greater efficiency in the utilization of satellite transponders, as it avoids the need to supply fully dedicated circuits to traffic routes which are idle much of the time. This flexibility has proven particularly important within INTELSAT for satisfying the needs of developing nations with relatively limited communications requirements.

Digital data compression techniques such as speech interpolation and video compression are used with TDMA, with a resultant severalfold increase in effective transponder capacity.

DUAL POLARIZATION

The second group of techniques for more effective utilization of the spectrum resource involves means for reusing the same increment of spectrum two or more times. The most familiar of these techniques is dual polarization, used presently in the newest series of INTELSAT satellites, and some of our domestic satellites, such as RCA's SATCOM's. Dual polarization is accomplished by orienting radio frequency waves in horizontal, vertical, or circular modes. For example, if one uses a specific

increment of the radio spectrum with horizontal polarization, it is possible to reuse the same increment of spectrum with vertical polarization. Isolation between the two polarizations can permit the use of the same spectrum space twice with negligible interference. Right hand circular and left hand circular polarization can also be used, as is done in INTELSAT satellites, to effectively double useful spectrum capacity.

SPOT BEAMS

Another technique rapidly gaining in preference is the use of spot beams—highly concentrated beams of energy formed by spacecraft antenna to illuminate specific areas on the surface of the earth. By concentrating energy with spot beams, several advantages are realized: earth station antennas can be smaller, and less costly; earth station high power amplifiers can be reduced in power, complexity, and cost; and, of course, the same increment of the frequency spectrum can be reused many times—8 times reuse is quite feasible with today's technology. Spot beams must not be too closely adjacent in order to be completely interference-free, but it is feasible to illuminate the area of the continental United States with 15 or more spot beams, and, combined with dual polarization, realize multifold spectrum reuse.

As I pointed out earlier, combinations of these conservation and reuse techniques permit impressive improvements in effective satellite transponder capacity. But, even with these improvements, traffic demand continues to increase and continues to challenge our capability to supply needed spectrum to satisfy these needs. We are now being forced to seek out additional frequency spectrum channels in the higher bands, for example, 20 and 30 GHz. Much additional fundamental research and development is needed before we can expect to utilize these new bands. Propagation phenomena are not as well known as at lower frequencies. Effects of rain attenuation and polarization are known to be more severe, and means must be devised to cope with them. We are hopeful that the National Aeronautics and Space Administration's [NASA] advanced communications research and development program will resolve many of these technical problems.

For our part, we will continue to refine our current techniques, and employ complementary technologies such as on-board switching, beam scanning, and regeneration to squeeze the last kilocycle of use out of the radio frequency spectrum we now utilize.

The CHAIRMAN. We are going to take about a 5-minute break, and we will come back with Mr. Smith as soon as that break is over.

[A brief recess was taken.]

The CHAIRMAN. The hearing will again come to order.

Our third witness of the day is Harry E. Smith, who is the vice president of CBS.

Mr. Smith, good morning.

STATEMENT OF HARRY E. SMITH, VICE PRESIDENT, TECHNOLOGY, CBS, INC.

Mr. SMITH. Mr. Chairman, I appreciate the opportunity to join you here. I think the issue of full first amendment freedoms is a very important one. I want to apologize to the people who are behind the screen because I did take the opportunity to bring some slides which have some information that I thought might be useful in understanding what is happening in the proliferation of information delivery channels.

The CHAIRMAN. Let me suggest at least to the press if they want to move over against the wall while Mr. Smith is going through these slides, you are welcome to do so.

Mr. SMITH. There is no doubt that radio spectrum is and continues to be a limited resource in the same way that trees from which newsprint is made are limited, and as a matter of fact, in the same

way that there will be a limited supply of silicon dioxide, which is sand, for making optic fibers——

The CHAIRMAN. Well, obviously everything is limited.

Mr. SMITH. Everything is limited, and the question is whether the limitation deserves special kinds of Government regulations on the electronic media which are not imposed on other media.

So I would like to begin by going through some charts which show the growth paths which are over the air and other electronic media followed over the past few decades.

[Charts shown.]

Mr. SMITH. For example, there were only 913 AM radio stations on the air in 1946. Radio stations in that year were content regulated on the ground that they used scarce spectrum and that there was room for only a few such stations. This slide shows the growth of AM radio stations, from 1966 to 1980, and in 1980 there were almost 5,000 such AM stations.

Meanwhile, another medium was getting its start, FM radio, and this slide shows the growth from 1966 to 1980 when the number of FM stations doubled from 1,500 to 3,000.

I think we have just lost the electricity on the slide projector. There we are.

That is the danger of working with the old technology of photographic slides.

The CHAIRMAN. And wires.

Mr. SMITH. Overall today, this shows the growth of total radio stations from 1956 to 1980.

Today there are 9,000 radio stations on the air, and it is becoming increasingly clear that further growth in the radio market will be limited not by a scarcity of spectrum, but by the laws of economics, that is, the ability of radio broadcasters to generate enough interested viewers and enough revenue to remain in operation.

Let me shift now to television.

This chart is a look at the growth of total television stations from the period of 1949 to 1977. In 1949 there were slightly under 100 television stations in operation. That has grown today to almost 1,000. But now look at the growth of the two categories. This shows what happened in terms of the VHF stations which grew very rapidly and plateaued in the middle 1960's. The UHF stations took off in the middle 1960's and have shown significant growth ever since then.

This shows UHF stations from 1953 to 1977, and a growth of stations on the air from around 100 to in excess of 300 today.

In the coming years, UHF will provide still more channels as a result of the new form of low-power television stations, of which there are more than 6,000 applications filed at the FCC.

The CHAIRMAN. Now, how do those work?

Mr. SMITH. Well, the allocation of UHF stations is determined by the Commission based on engineering judgments that allow stations to operate on the same frequencies, and to be spaced enough hundred miles apart that they do not interfere, so the people in their homes do not have two stations coming in on the same channel.

The CHAIRMAN. Now, give me a for instance. With low-power television, how many more television stations can you put in the Washington, D.C., area?

Mr. SMITH. I do not know the answer as far as Washington, D.C. I also will say that that is a question that I find difficult to touch because it requires very great specialization in terms of RF engineering.

But the idea behind low-power engineering is if you reduce the power of the station, you can drop a station in and serve a dense urban market or a small suburban market, and by reducing the power, you can serve a number of viewers within a small radius without interfering with other stations in other cities. So, it is a way of increasing the number of television stations.

As I said, there are 6,000 applications. That may be only the beginning of the ability to add stations based on the low-power concept. But the number of stations will only grow.

It is interesting to look at why UHF—looking at the last slide—why UHF development lagged VHF. The lower frequencies are relatively easy to deal with and they tend to fill up first. So the growth of UHF awaited the saturation of VHF, and then UHF began to take off.

The same thing is beginning to happen today. Recently, a company called Contemporary Communications filed an application with the FCC to provide four to eight channels of service on still higher frequency known as the MDS frequency band. It called this service a multichannel service or MCS. A new acronym has been invented.

Contemporary plans to transmit these microwave signals into subscribers' homes with a special antenna on the roof, and the signals would come down and be converted into a standard broadcast frequency and displayed on a screen. So in any city where a multichannel system went on the air, we would have the addition of another four to eight television channels available to any household who elected to put in the particular hardware.

Now, the significant thing about this is that the hardware for the home to receive the signal would probably have cost \$3,000 or \$4,000 as recently as 10 years ago. The growth of semiconductor electronics has made it possible now for this home to be equipped with devices that have a manufacturing cost of probably about \$100. This is an example of how the growth of technology tends to make the higher frequencies more accessible to the general public, and, therefore, to add new program channels.

I might add that one of the new program channels that is coming along was discussed by the prior speaker, and that is the direct satellite. And direct satellite broadcasting is on the frequencies that are still higher than the MCS, and they also would be received in the home by special antennas and special decoding equipment such as this.

So as there is a need for more and more program channels, the higher frequencies which are presently unoccupied will open up many more channel opportunities for companies that have good ideas for additional programing.

Let me go to the development of yet another whole system of delivering television programs to the home, and I am talking, of course, about the cable industry. As you know, over the air is not

the only way of delivering television signals. Cable television has expanded with incredible speed, and this chart shows the growth from 1975 to 1981. A growth of about 2 to 22 million subscribers getting cable service.

Initially, these services simply relayed existing broadcast programs, but very quickly along came a development of special channels for which consumers paid. This chart shows the growth of pay cable from 1974 to 1981, a growth of half a million to over 15 million people who are paying a small fee to get additional new program services.

This cable service is now available to close to half of the households in the United States. This chart shows the growth of homes passed by cable. These are the homes who had access to the service from 1975 to 1981. And that is a growth from about half a million to 40 million homes, and they continue to be wired at a rapid rate.

As cable expands its reach, there is another advancing technology which tends to increase the number of services that are available, and this is the channel capacity. The new systems are being installed with 60 to 100 channels of cable service. The older systems that were designed with 12 channels are in the process of being upgraded.

So we not only have growth in the number of homes served by the cable industry, but each of those homes is now served by an increasing number of channels. We also have some broadcast services that are offering special channels.

This shows a growth of subscription television. This is pay television programming that is delivered over the air, generally on UHF stations in the evening.

The CHAIRMAN. This is pay. How is it delivered?

Mr. SMITH. This is delivered generally on a standard UHF station in the evening hours. The program is encoded, so it cannot be received in proper fashion on a normal receiver. The provider of the service puts a decoder into the subscriber's home. The subscriber pays a monthly fee for that decoder, and that, in effect, delivers the special program to him. It is a way of having pay television beyond the reach of a cable system. And subscription television is the name of the service.

There is another pay service which is delivered over a higher frequency, MDS, and this shows the growth of pay subscribers on the MDS service going from 1976 to 1981 from about 33,000 to a half a million subscribers.

If I add up the three prior slides, I can show you the rapid and accelerating growth of services for which people are paying. This shows the total pay television industry from 1974 to 1981 growing from a half a million to 17 million subscribers.

In addition to this, there are presently 3 to 4 million homes who have videocassette or videodisk players. This is another form of pay television where people buy or rent records or discs that permit them to play programs all the way from movies to concerts in their home.

I forecast that by the end of the decade, there will be 10 to 20 million American homes who have this home video capability. Taken together, all these technologies are going to provide a sub-

stantial number of additional television channels, and this is already happening in many cities.

We are putting in the record a book that was published by the NAB. You have a copy. Of particular interest in this book is a listing of the present status of broadcast outlets.

For example, it shows in New York City that there were about 28 percent of the people who can get cable with an average of 29 channels. There are 3 MDS channels in the higher frequency; there are 14 UHF and VHF stations, about a quarter of a million videodisk and videocassette players, and almost 80 radio stations that can be received. That is a tremendous variety of programming.

The CHAIRMAN. How many television stations? Forget the videodisk and cassettes. How many television stations can be received?

Mr. SMITH. Over the air, 14 in New York.

The CHAIRMAN. And cable, how many?

Mr. SMITH. And cable, there are 28 percent of the homes who get an average of 29 channels.

The CHAIRMAN. And three DBS?

Mr. SMITH. Three MDS. And when the DBS service is launched, that would add to that. If the multichannel system is operational in New York, that would add four to eight channels. As the cable systems upgrade, they will penetrate to more homes, and the 29 average channels will move to the range of 30 to 60.

You will find in this book a listing of the top 20 or 30 markets with this analysis for each, and it is a story of a growing absence of scarcity in television and radio channels.

One other thing I might touch on just very briefly is the growth in special program services designed for cable. The checked part of this chart shows the special cable services that were available to the public in 1976 and the number is two. The open bars shows the number of special programs that were available to cable subscribers 1 year ago, either existing or announced to start soon. And the number is 48; a tremendous growth in special programming being provided to people on cable systems.

Now, another new technology is coming along which is helping this grow, and that is the technology of addressability.

The CHAIRMAN. Of what?

Mr. SMITH. Addressability. It used to be when someone provided a pay service, they would have to put a special box in every home to decode the service and permit the provider of the service to get his revenue. This could lead you to the sort of ridiculous situation where a person who had 10 services would have a pile of 10 of these little black boxes on top of his television set. Clearly, a very expensive and probably impossible situation.

Addressability is a way of putting one decoder in the home that can be remotely turned on and turned off for a number of channels, and these are now being manufactured. Cable operators and some subscription television operators are selling them, and this permits the cable operator to market and launch new and varied program services at very low expense. So, I think addressability will help to make many of these services available broadly to cable subscribers, and will encourage experimentation and diversification in programming.

I have talked mostly now about conventional television programming. As you can see, there are three elements which will sustain a dynamic growth in the number of channels that are available into most homes. One is the growth of the electronic media. Cable TV, low-power television, multichannel, microwave systems, direct broadcast, satellites, and home video will all deliver more channels rather than fewer.

The second is the large number of well financed programming ventures, and the third is the technology of addressability, which will accelerate and encourage the development of special programming for which people pay.

I would like to move on to a topic which is a special favorite of mine, and that is the new electronic media, probably the newest of the new technologies to come along. Namely, the digital transmission of text into homes. These are things called Teletext and Videotex, and they, I think, represent a family of new media with the potential of significantly changing the way people receive information as contrasted with programmed entertainment.

Contrary to popular opinion, people still do read. This is a chart that shows the number of magazines per 100 adults that are made in the United States. And, as you see, the number hangs high, even in competition with television and pay television. Currently—and this goes from about 1920 to 1975 which is the latest year available—there are 1.5 magazines a year printed in the United States for every adult.

Looking at this a different way, this is the total number of magazines, so you can see there has been a slight growth in the number of publications that are being sent out in printed form. And, if I take the readership and the number of publications, this is the circulation. Again, from the period of about 1920 to 1975, this is the number of magazines issues sold. And you can see in current years, there are a quarter of a billion magazines being printed and shipped to homes in the United States.

Now, electronics is going to provide another means of delivering textual information. There was an Arthur D. Little study recently which pointed out that by the end of the decade, more than half of the American people will have some sort of a computer-type terminal at their office, and they also predicted that perhaps a third of all American homes might have a computer-type information terminal in their homes.

What we are really talking about here—and I hope you will forgive the cartoon chart—is a very simple thing. It is the combination of computer technology and communications technology coming to a cost where they can be available to the mass market, to people in their homes. And these are the things that we call Teletext and Videotex.

I assume, if we were wise enough to look back at this point in a future year, we would realize that Videotex and Teletext are perhaps just the first two applications of this capability. But since they are the only ones I know about today, I will be happy to talk a little bit about what I think I know.

You see, these things, Teletext and Videotex, are characterized as electronic newspapers or printed radio or instant magazines or computerized directories. I would prefer to think of them as all

those things plus electronic mail, electronic banking, electronic shopping. They have the potential of being a fairly basically new communications medium.

The first one I would like to talk about is Teletext, which is a way of transmitting digital information piggybacked on a television signal. We take that black border at the top of the picture, which in technical terms is called the vertical blanking interval, and we put a stream of digital information in there. And the digital information goes out on the TV signal. People cannot see it if they are watching a television program, it is completely hidden. And the information is sent out over and over again, just like a large information carrousel.

People in their home have a little decoder, and if they want to see the information, they punch a page number on the decoder, like they might punch page 19, and if that happened to be the local weather, in 5 or 10 seconds the local weather forecast would pop up on the television screen in printed form. And, I will show you some samples of some testing we have done, later.

It is a fairly powerful medium. It is very timely. It is always up to date because it is computerized information that is constantly broadcast. It is selective, in that people can look at what they want to; they do not have to look at anything they do not want to. It is a medium that people can control. It is easy to use because it just has a little key pad with the numbers 0 to 9, and anyone who can use a calculator can use it.

And it will be an advertiser-paid service, like commercial television, that will be free to the user. It does have limitations, as I will show you in a minute. It has to be limited to a television screen; it cannot handle beautiful photographs, and it only can handle 100 or 200 pages.

There is another medium that is coming along, Videotex, which is very similar except that Videotex is a two-way system. Instead of broadcasting the information, it uses a telephone network or a cable and, in effect, connects a home television receiver, which can either be a receiver that watches commercial TV or a home computer screen, to a large, data-based computer nearby. It has a typewriter-type keyboard and is designed so that any person without computer skills can type requests on the keyboard, which can be simple numbers or simple words, and get an unlimited amount of information back from the data-base computer.

Because it is a two-way system connected by wire, people can additionally send messages to one another. And they can order material, they can do banking. The two-way nature of Videotex, the interactive nature, is the thing that makes all these things possible. Like Teletext, the Videotex is timely. It is always up to date; there are no times between a publication deadline and the viewer viewing the information. It is very selective; the people look at only what they want. It is interactive, as I said, and it is comprehensive. It can handle literally thousands or tens of thousands of screens of information, and people can seek out just what they want.

Like Teletext, it is limited in format to what you can get on a TV screen. The graphics are crude. It is somewhat more difficult to use because you have to be able to operate a typewriter type keyboard, and it probably will be marketed for a user fee like pay television.

The question, of course, is whether people will use these new computer-base technologies. This is always the question. And to try to find out the answers, we have been involved in some tests which I would like to just very quickly review for you.

In Los Angeles, we put one of the Teletext magazines on the air; the NBC station and the public broadcasting station also put their own Teletext service on the air. So in Los Angeles in the past year and a half, we have had three services, and we have been measuring how people react to them and whether people find them useful.

I took some slides off the screen and I will give you an idea of what the Teletext service looks like. We call it ExtraVision. This is the main index; that gives you an idea of what is in it, news, weather, finance, sales, travel, sports, leisure and so forth.

The CHAIRMAN. Whose data bank are you using for that?

Mr. SMITH. We are collecting data from a number of sources; from the wire services, from a number of Los Angeles sources, from our own channel 2 newsroom in—

The CHAIRMAN. It is your data bank? It is a CBS-owned and operated data bank that has been put together from difference sources?

Mr. SMITH. The editors who are assembling the product and who are involving the Los Angeles merchants are employees of the local station. I will get to this later, but this is a service that can be provided wherever there is a television station. So as the number of TV stations or cable channels increases, every one of them can have a Teletext service. So this service will be as diverse as the TV channels and will be local in control and in content.

I am going to run very quickly through this. To give you an idea, here is a news page. The news headlines were there that day, and there were about 10 pages of news to back it up. The lead story of the day, the world and national news, regional, and right down to the local and people information.

The CHAIRMAN. I am curious. What do you do with these kinds of stories in terms of the fairness doctrine and equal time question? Do people call in and complain and want a chance to explain? And do you give that opportunity to them?

Mr. SMITH. Well, we deal strictly with news headlines here. We have had no such complaints. We have not put editorials on the service at this point.

Another category is weather. A lot of people complain about the weather, but there is nothing we can do about it. Here is a Los Angeles forecast which is kept up to date. It is a very useful place to find out if it is going to be before going to work. This is a sponsored page where Eddy Bauer is putting up a page of ski conditions near Los Angeles, and there are another six or eight pages of weather for the Nation and the world. There is a financial section where we include such things as Dow Jones averages, updated through the day, and Treasury bill rates and other things of interest to Los Angeles people.

There is a consumers section with emergency phone numbers and such things as a school bulletin board, the Los Angeles school system is an information supplier in this regard. There is a craft feature relative to food, a little household hint by Mary Ellen, a feature for the Los Angeles SPCA.

There is a sales and special section where supermarkets put their specials of the day. They tend to put up the perishable goods as a way of moving them because of the deadline intensity of this. That was Ralph's, a competitor of Vaughn's.

Department store ads featuring specials of the day, Magic Mountain, a resort advertising for help wanted. There is a travel section. One of the most used and looked at sections is travel where the road advisories tell of accidents on the thruways. American Airlines puts up the arrivals at the LAX. Everything was on time this day. TWA with a special New York price. Western Airlines shows Las Vegas departures.

Here is an interesting one. The Official Airlines Guide puts up all the available fares between Los Angeles and San Francisco on a page with a Ramada Inn spot on the bottom.

Sports is one of the major sections, as you may imagine, with the constantly updated scores. In this case, it was both the basketball and hockey season. A feature on the L.A. Kings, the local hometown team. There is a section on leisure. We put in the channel 2 television schedule, but additionally there is a Los Angeles calendar of ideas of things to do in the vicinity.

There is a Ticketron availability of New York theater tickets for people going to Manhattan who might want to see a play. And of course, the Los Angeles Music Center. Here is one that shows seat availability for a current play at the Ahmanson Theater.

In addition, one of the pages is devoted to captions. If you are hearing-impaired and wish to see the captions on the program which is going on, you can turn to the caption page, and the technology is designed in such a way that the caption will follow the program and be notched into the video in that fashion.

We are just completing this test. We put receivers like this in about 100 homes around Los Angeles. We find people use the service. Recently, both NBC and CBS have announced their intention to start a Teletext service on a full-time basis next year.

The other service we are testing is Videotex. And this test is starting at the present time in Ridgewood, a small town near New York City. The test is a joint one between us and AT&T. The telephone company is providing the technology. We are providing content. And the telephone lines are coming in under tariff from New Jersey Bell.

The test is in Ridgewood, as I said. It is starting imminently. It will run roughly 7 months.

Now, Videotex is like Teletext, again, but is a two-way service so we can do a lot of things Teletext cannot do. We can handle a great deal of information. We are testing many thousands of pages in this test.

In addition, it can have message service. You can send messages from one terminal to another. It can handle personal files and it can handle a shopping service. This will give you some idea of the information categories in the test. Many of these are similar to Teletext, but because of Videotex you can get right down to the community. We have news all the way from New York metro down to the actual Ridgewood community.

Here again, just to give you an idea of the scope of the service, are some of the sports categories, right down to the local high

school. Maroon happens to be the local Ridgewood team. And as you know, sometimes the hardest thing to find out is whether the local team won or lost last night, and it will be in this service.

Here is a complete stock market quotation listing, a business news summary from the Journal, a selection of community news. We actually have births and weddings and engagements and obituaries, things of interest to the town. A teen section with high school instruction material, a kids section with games and bulletin boards. A TV game which is in here, called Madmaze, lets the kids go through this maze and win prizes. A concentration game. A quiz. Amusements.

Because of the technology, of key word search, you can actually move to an ad for a Columbia Record Club by typing the word Columbia onto the bottom of the screen. You can order records. There is a catalog shopping center. Saks Fifth Avenue has things for sale. There is a comparison shopping guide, where you type in categories and learn what products are available and where you can get them at a discount.

You can order a Ramada directory. There is a complete listing of entertainment in the city. The New York Times has an arts and leisure guide. Astrology, of course, is in every service. A quiz of Reggie Jackson's fortunes of interest to people in Ridgewood, as is the answer.

A food and fitness guide where you can type in information about what you would like to have for a meal and how many calories. And it goes through a listing of recipes and gives you suggestions.

A community bulletin board. A message service where you can send messages to other people and so on and so forth.

My view is that this will lead to a pluralistic marketplace in information. I think Teletext and Videotex will find their place among the other media and will provide useful and diverse additions to the media marketplace. I think Teletext will take off very quickly because it is easy to use, and it is inexpensive, and it is not forbidding. I think Videotex will come along later as people's appetite is whetted for information and as people want to take advantage of the two-way interaction of the system.

We have worked with a number of other countries and with AT&T to develop a technical specification for these services, which we have submitted to the FCC for Teletext. The technical spec has the purpose of letting any hardware manufacturer, whether he makes a TV set or a home computer, any service company such as a broadcaster or a publisher, any delivery system such as telephone or cable, serve the end market. The hardware may look like this.

The Teletext will come with an adaptor with a keypad at a couple of hundred dollars. Probably more people will buy Teletext built in, and these sets will be available very quickly at a price, maybe \$50 to \$100 in addition to a regular television set.

Videotex will either be available with an adaptor to a present TV set or as a built-in integrated terminal. If this looks to you like a home computer, you are right. It is very much like a home computer. And another way to get Videotex is just to add a modem to any home computer you have not had, and this then becomes the communication device for the computer.

And finally, if you put both a tuner and a telephone modem on a home computer, you have the ultimate communication device. This has been a discussion of technological developments. And I appreciate the opportunity to present them to you. They all involve use of the spectrum, even cable television relies on satellite-relayed program. And Videotex and Teletext involve the use of telephone network with microwave intercity. Even printed newspapers like the Times and the Journal distribute to printing plants by satellite.

And let me just quickly go through one last set of slides to talk about what has happened to the spectrum. The extent of usable spectrum was at first very small, barely able to handle AM radio and a few point-to-point radio transmitters. And this was the spectrum at the beginning of radio. It then expanded to accommodate FM radio, VHF television, and a lot of point-to-point radio services. It then grew to pick up UHF television, mobile and mobile radios, and finally, satellite services, including today's fixed satellite. And the future will bring many more such services.

This chart, by the way, is drawn on a logarithmic scale so that the bottom row represents nine times as much spectrum availability as the rows above it.

The developments I have just presented make it clear that spectrum availability is limited only by transitory constraints on our technical ability. The spectrum capacity is there for us to use. And use it we will.

The only real limitations on the proliferation of services are economic: Will demand be sufficient to sustain the service? I will leave it to others to draw the full first amendment implications from these facts. But technology constraints would not appear to be an appropriate basis for first amendment restrictions on the electronic media. Thank you very much.

The CHAIRMAN. Now, let me ask you, in the Washington, D.C., area within the next 5 to 10 years, assuming cable is ever in Washington, D.C., by that time, how many television stations could a normal householder reasonably expect to be able to receive?

Mr. SMITH. Well, there are presently seven UHF and VHF stations in the market. Cable television could very easily add another 100 available program services. Direct broadcast satellite could add another dozen. The multichannel service that I mentioned, operating in the microwave bands, could easily add another dozen. I lost track.

The CHAIRMAN. We are easily up to 125, on 150. The limit really is going to be based upon the kind of set you have and how many stations you can receive in terms of the allocation of the spectrum. Newspapers, major newspapers, are going to be significantly more scarce than television stations.

Mr. SMITH. That may be true. They presently, I believe, are more scarce than television stations and radio stations in most markets.

The CHAIRMAN. The argument is often used, well, of course, anybody can start a newspaper; all you need is a mimeograph. But a four-page mimeograph is not the equivalent of the Washington Post. I suppose in that sense, anyone, if you want to use that analogy, anyone can start a radio station if you call a CB radio a radio station.

Mr. SMITH. That is right.

The CHAIRMAN. You have to compare apples and apples. I have not recently checked the exact figures on daily newspapers, but they have declined slightly in the past few years at the very time when radio and television stations have been expanding exponentially.

You initially stated that everything is scarce. I suppose there is a limit to the number of newspapers you can print if you run out of newsprint.

Mr. SMITH. You could run out of forests.

The CHAIRMAN. Yes, you could run out of forests and you could run out of, therefore, the equivalent of their "spectrum" being used to print it. Clearly, under present technology, you probably could not have 3,000 television stations here, but you could certainly have more television stations than any person could conceivably digest in 1 day.

Mr. SMITH. I think that is true. You would get them through cable, the cable technology. A single coaxial cable easily has the ability to deliver 60 conventional television services together with other audio and text services.

The CHAIRMAN. Now, explain what Professor Pool is referring to in taking one UHF television channel and turning it into 100 radio stations. How does that work technically? And bear in mind that my study of physics and chemistry ended in high school.

Mr. SMITH. I think I understand the mathematics. An FM radio station, if I recall, is about 200 kilocycles of bandwidth. The amount of spectrum that a station uses is determined by bandwidth, the numbers of cycles per second. But when I went to school, it was kilomegacycles, and now it is megahertz.

The CHAIRMAN. Now you have lost me.

Mr. SMITH. When I went to school, a Hertz was something you rented at the airport. But if you take 200,000 cycles required for an FM station and the 6 million cycles required for a television station, UHF or VHF or DBS or MDS or any TV station, not only UHF, but any TV station, takes about 6 million cycles. The straight mathematics I think comes out that you could have 30 FM stations that would have the full music stereo quality of the FM station.

The CHAIRMAN. For each UHF channel.

Mr. SMITH. Thirty for each UHF channel. But you do not need to focus on the UHF channel. You could take a 6 megacycle piece of the spectrum at any point in the spectrum and add 30 more FM or, I guess, roughly 100 more AM stations.

The CHAIRMAN. About 100 more?

Mr. SMITH. AM stations take less frequency than FM stations.

The CHAIRMAN. Then all we are limited by here are the kind of radios we have at home that can receive a given signal. It is like the old days when the FM band opened up, and all that the radios could pick up was AM.

Mr. SMITH. Yes. I do not know whether the public needs more UHF stations or more FM and AM stations. So I am somewhat troubled by trading UHF stations for radio stations. But I think the fact is that there is plenty of spectrum space available as the frequencies go higher and as the technology makes the higher frequencies easier to receive at low cost.

The CHAIRMAN. Well, I am trying to get a rational idea what we are talking about. Clearly, you are saying we could probably have a couple of hundred new radio stations if we wanted a couple of hundred radio stations. We are not limited in the sense by the spectrum. The frequency is there, and we can fit the radio stations in.

There are some people who would still argue scarcity. I assume that if we had 500 radio stations in the Washington area, then to those people there would still be no point in saying that scarcity had been eliminated. They would just point to however many stations there were and say, well, not everyone can have one and therefore, they are scarce. And I would say, everyone cannot have a newspaper and, therefore, they are scarce. So the real limitation is not technical.

Mr. SMITH. The limitation may be technical for a transitory period. But as demand develops, the technology provides the additional channels. The real limitation is viewer interest and economics.

The CHAIRMAN. My hunch would be if you had 200 new radio stations here, electronic manufacturers would soon be manufacturing radios that would pick up those 200 radio stations.

Mr. SMITH. The consumer electronic manufacturers have proved to be very alert to meet the new market opportunities. In a sense, if I wanted a radio station today with three listeners, I would just buy myself a citizens band receiver. So in a sense, there is radio all over the area where there are very small audiences. What we are really talking about is larger audiences.

The CHAIRMAN. Let me ask you, when we get to where we have a couple of hundred radio stations in any given market, do you think they would become like magazines? The stations will broadcast to a narrow audience and they may only have 5,000 or 6,000 listeners but can you literally make a profit on 5,000 or 6,000 if you were broadcasting a very narrow subject?

Mr. SMITH. I think as restrictions are removed from the stations and as technology moves forward, that stations can survive on smaller and smaller audiences. And I think that the way new stations will come to exist is by appealing to audiences that currently are not served.

The CHAIRMAN. Well, of course, the classic example in reverse of that is Mr. Geller's station up there in Gloucester, Mass., that was broadcasting classical music all day. He lost his license because he was not broadcasting the weather and the traffic reports and the news, despite the fact that Gloucester could receive 40 other stations.

Mr. SMITH. That is right.

The CHAIRMAN. Indeed, for all those years, Mr. Geller must have been able to at least break even or make some money. He ran the station himself, and he must have had enough listeners that liked his classical music to keep him on the air.

Mr. SMITH. That is right.

The CHAIRMAN. I would assume that would have to be the case when the number of stations in a market reach the hundreds. We might have three or four stations that would try to reach broad audiences, but most of them would say, we don't need an audience that size. With 200 stations, you would have 10 or 15 foreign-lan-

guage stations in this city. You would be hard-pressed to claim that you lacked for diverse voices.

Mr. SMITH. That is right. But content regulation, which imposes restrictions and incurs costs for those very type of operators, tends to inhibit them and tends to reduce the number of such services available.

The CHAIRMAN. I would go even further than that. If you apply—and again, Mr. Geller's case is the classic example—if you apply the same public service and content requirements to all 200 radio stations, you are not getting diversity. What you are getting is repetition, and if they all must provide 12 percent news and they all must provide 4 percent weather, that is not doing much for diversity.

Mr. SMITH. That is right. There is little value in reporting a sunny day on 200 stations.

The CHAIRMAN. My hunch would be in those 200 you also have 1 or 2 all-weather stations. And if you really want to hear the weather, you can turn to one of those.

Mr. SMITH. You might. You might.

The CHAIRMAN. Of course, for those of us who sail, we have that now.

Mr. SMITH. That is right. Given the freedom to program, people will find audience interests and I think will serve them. And radio, in particular, has the economics that permits very small audiences to be effectively served, perhaps by people like the fellow in Gloucester.

The CHAIRMAN. Now, let me ask you, how do we solve this problem? You are broadcasting out there on your Videotex—Teletext or Videotex in Los Angeles?

Mr. SMITH. Teletext.

The CHAIRMAN. And you are picking up bits and pieces of information here and there. So far, you have stayed away from editorials.

Mr. SMITH. We have.

The CHAIRMAN. For the very understandable reason that you are going to get some equal-time demands if you start putting on editorials.

Mr. SMITH. There is a very limited space. We can handle about 100 pages.

The CHAIRMAN. One hundred what?

Mr. SMITH. One hundred screens of information.

The CHAIRMAN. What does that mean?

Mr. SMITH. That means that while I showed you about 30 screens, what I showed you is about a third of the information in that service. If all 18 stations in Los Angeles were on the air with Teletext, which they probably would be commercially, there would be 1,800 screens, different screens.

If those people were free to serve the audiences that listen in Los Angeles, I think there would be screens appealing to every community in that town, ethnic, economic. Every community in that town would have one of those stations targeting information of value to them about news in their town, commercial, information, and so forth.

The CHAIRMAN. Well, that is especially so if you have a gadget at home as you said, like a home computer—which allows you to push a button for selection. If your main interest is financial, one or two of those stations are going to have a bundle of financial information.

Mr. SMITH. Unless they all have to put up the weather and the sports and the news, and then they will all look just a like.

The CHAIRMAN. My hunch would be, absent any content regulation, you would have several that would have all foreign news, and several would have domestic news. A couple may have weather. A fair number will have financial reports. A number are going to have nothing but sports.

Mr. SMITH. A number will target the interests of the Hispanic community as they do with the television broadcasts. It was interesting, the public station who experimented with us in the test focused very heavily on the community, the city government, and the city schools, and provided a valuable service. They felt that was consistent with the market that they served and their charter.

The CHAIRMAN. I have discovered there is a hard core of people who will watch anything. There are people in Oregon that watch that House of Representatives broadcast all the time.

I suppose when we get television in the Senate, there will be a hard core of people who will watch that. I do not know how long they will watch it. It would be hard to make a filibuster lively, but there will be a cadre of people who will get hooked on that.

Mr. SMITH. And if there is a market, someone will try to serve it.

The CHAIRMAN. When you get to Teletext and beyond, and if you continue to have content regulations, then you are going to be wary, are you not, of what you put on it? You are not going to want to buy trouble.

Mr. SMITH. I think by nature of the limited number of screens of information that we have, we would probably tend to shy away from subjects which would cause us to devote a large amount of the screens to equal time demands, because they would tend to wipe out other important service elements, or we might decide if we were another station in town to devote the whole service to that kind of information, and that might be a very exciting kind of a Teletext.

The CHAIRMAN. Just a whole day of fairness and equal time.

Mr. SMITH. A whole day of editorial and rebuttal, not a bad idea. Somebody will try that, out of 17 Teletext services in Los Angeles.

The CHAIRMAN. That might work. Again, there might be enough of an audience.

Mr. SMITH. There might be.

The CHAIRMAN. I think that is all the questions I have. I appreciate it. Thank you, Mr. Smith.

Mr. SMITH. Thank you very much.

[The statement follows:]

STATEMENT OF HARRY E. SMITH, VICE PRESIDENT, TECHNOLOGY, CBS, INC.

Mr. Chairman, CBS appreciates the opportunity to join you in discussing the vital issue of extending full first amendment freedoms to the electronic media. As you know, and as I will be discussing in greater detail, CBS is involved in many of the new communications technologies, including considerable efforts to improve existing

broadcasting services, as well as efforts to develop better ways of bringing new kinds of information and entertainment services to the home through improved technology. We commend you for your sensitivity to the issue at hand, and for your leadership in helping to insure that the principles of the first amendment do apply to these new technologies.

There is no doubt that radio spectrum is, and will continue to be, a limited resource. So are the trees from which newsprint is produced; so is the copper from which telephone and cable television systems are made today. From that matter, there is a limited amount of silicon dioxide—sand—from which the fiber optic systems of the future will be made. The question before this committee is not whether radio spectrum is limited, but whether scarcity of the radio spectrum justifies special kinds of government regulations on the electronic media which are not imposed on other media.

I would like to begin by looking at the growth paths which over-the-air and other electronic media have followed. There were only 913 AM radio stations on the air in 1946. Radio stations in that year were content-regulated on the ground that they used scarce spectrum, and that there was room for only a few such stations to go on the air. (Slide 1). By 1980, as this slide shows, there were more than 4497 AM radio stations.

(Slide 2). Meanwhile, another medium was getting its start—FM radio, which had only 48 stations on the air in 1946. By 1977 there were more than 3000 commercial FM stations.

(Slide 3). Overall, around 9000 radio stations are now on the air, and it is becoming increasingly clear that further growth in the radio market will be limited, not by a scarcity of spectrum, but by the laws of economics, that is, the ability of radio broadcasters to generate enough revenue to remain in operation as viable business enterprises.

(Slide 4). Now let's look at some of the traditional television media. The grand total of television broadcast stations grew from 6 in 1946 to 972 in 1977. Of course, common wisdom has it that broadcast television today is approaching a saturation point, that the spectrum will fill up, and there won't be room for anybody else.

(Slide 5). Let's back up a moment and consider a pattern that tends to recur over and over again with these technologies. VHF television stations approached their saturation point around the mid-1960's. (Slide 6). UHF television stations didn't really begin their rapid growth path until the mid-1960's: only 102 UHF television stations were on the air. By 1977 that number had more than tripled.

In coming years UHF will provide still more channels in the form of low power television stations. More than six thousand applications have been filed at the FCC, and the winning applicants should be able to provide a valuable addition to existing services, particularly in rural areas, where a substantial amount of unused UHF spectrum is still available.

Why was there a delay in UHF development, and why is UHF today only beginning to approach its saturation point? UHF uses higher frequencies than VHF. As a general rule, lower frequencies are easier to work with; higher frequencies require the use of more advanced technologies which usually start out being more expensive.

Now that UHF frequencies are beginning to fill up the focus shifts, as it always has, to the development of frequencies which are still higher up the radio band. (Slide 7). Three months ago an MDS carrier called Contemporary Communications filed an application with the FCC seeking authorization to provide between four and eight channels of service in each of five cities. Calling its system multichannel service or MCS, Contemporary plans to transmit omnidirectional microwave signals directly to subscribers' homes from a central transmitter site in each city. CBS will package the programming for this service.

If it is approved by the FCC, MCS will operate on frequencies which are about three times as high as UHF TV. A few years ago the service would not have been feasible because single channel receivers for those frequencies cost \$3,000 or more apiece, but the price fell to \$300 in 1976 and dropped below \$100 three years after that. Today the necessary equipment can be manufactured for prices that are easily affordable by the average consumer. A special antenna will detect the signal outside electronics will convert transmission down to a frequency which can be handled by an ordinary TV. A wire will carry the signal into the house, through a channel selector box, and into the subscriber's existing television set.

The programming will include a multichannel package of movies, sports, and other premium services which have hitherto been available only on cable.

As both UHF television and MCS demonstrate, over-the-air spectrum is not really limited in an absolute sense. The only limit is the current state of technology, a

boundary which is constantly expanding its usable frontier. Within a few years American technology will literally reach for the stars with direct broadcast satellites, a service which will use frequencies almost five times as high as those planned for MCS. Applications currently on file at the FCC contain proposals which together could provide as many as 29 direct-to-home satellite television channels per home.

(Slide 8). As you all know, over-the-air transmission is not the only way of delivering television signals to the home. Cable television has expanded with incredible speed since the mid-1970s, when Time Inc. began offering its Home Box Office service by satellite. The number of basic cable subscribers has grown more than tenfold from less than 2 million in 1975 to more than 20 million today. (Slide 9). Pay cable has followed a growth curve which has been even more dramatic in recent years. (Slide 10). Both pay and basic cable are available to some 40 million households passed in the United States, a number which continues to grow in an upward-sloping curve.

As cable expanded its territorial reach, advancing technology is expanding the channel capacity of each cable system. The most recent franchise awards are going to bidders who have proposed one hundred or more channels, and the old 12-channel cable systems are being substantially upgraded as their franchises come up for renewal.

Other media are also showing rapid growth: (Slide 11) subscription TV and (Slide 12) MDS. (Slide 13). The total universe of households subscribing to premium pay channels is growing at a geometric rate. This curve could rise still faster as new distribution media come on line: broadcast satellite and low power TV to rural areas, multichannel microwave systems to the urban cores, and satellite-supplied master antenna systems for the more than 15 million American households in multiple unit dwellings.

Both over-the-air and cable transmission services are facing competition from home video devices—videocassette recorders and videodisc players. Between 3 and 4 million videocassette recorders will be in American homes by the end of this year, along with a quarter of a million videodisc players. Storefront videocassette rental shops provide consumers with a vast selection of movie titles to view on their own schedules. VCR's also increase the efficiency of existing transmission media by giving the consumer access to programs which appear at inconvenient times of the day or night. ABC, for example, will provide a pay TV service during the graveyard hours when its affiliated stations might otherwise be dark. Subscribers will record the programs for subsequent viewing. Hardware prices are continuing to decline and, by the end of the decade, home video devices will likely be in as many as 10 to 20 million American homes.

Taken together, all of these technologies will obviously provide a substantial number of television channels in the years ahead and are already doing so in many cities. This chart, for example, shows the number of channels which were already available in several cities more than a year ago. Since that chart was prepared the number of outlets has increased. (Cardboard chart entitled "Present Status of Video Outlets.") Last year CBS completed a detailed survey of existing channels in the top 50 metropolitan areas and made market-by-market projections for each city. The results of this study were published last year by the NAB in a book entitled "New Technologies Affecting Radio and Television Broadcasting," which I offer for inclusion in the Committee record.

The data shows clearly that the overall growth of new television channels will not be limited by any technological constraints on available spectrum. The main constraint on growth will be economic: whether there is sufficient consumer demand for services to make them sustainable businesses.

(Slide 14). This chart shows the amazing diversity of programming services that are already being delivered to cable systems by satellite.

A new technology called "addressability" will significantly affect the development of pay services. Until very recently, the only way to charge customers for an extra pay channel was to put a special box in the subscriber's home. If the customer wanted an extra channel, or perhaps just wanted to change from one pay channel to another, the cable company would have to send a guy out in a truck to install a different box. That's obviously an expensive way of doing business, and it made it less than practical to offer more than one or two very popular pay channels like Home Box Office.

Addressable decoders can be turned on and off by an electronic signal from the head end of a cable system. Among other things, addressability brings the potential to charge special fees for special events on an event-by-event basis. Once installed, however, an addressable decoder opens up other possibilities as well: additional pay

channels can be offered on a tiered basis, without any additional hardware being installed in the home, at a much lower cost to the consumer.

Thus we can see, converging in the years ahead, three elements which can sustain a dramatic growth in the number of channels of video service:

(1) the dramatic growth of electronic media which convey many television signals—cable TV, low power television, multichannel microwave systems, direct broadcast satellites, and home video devices.

(2) a large number of well-financed programming ventures.

(3) technology like addressable decoders, which will provide new sources of revenue to pay for an expansion in program production.

I'd like to move on now to a topic which is a special favorite of mine—Videotex and Teletext—new media which add potential new ways of conveying textual information to consumers. (Slide 15). Contrary to popular opinion, there are a number of Americans who still read. In fact, Americans seem to be doing at least as much reading as they did before the advent of TV. This chart, for example, shows that the number of general-interest magazines purchased per 100 adults has hovered at around the same level between 1955 and 1975, which is the latest year for which the Census Bureau has released the data. (Slide 16). The number of different magazines being published actually increased over that period, (Slide 17) and the total circulation of general-interest magazines is much higher than it was in the pre-television era.

Electronics will provide another means of delivering information to consumers and businesses in the years ahead. Arthur D. Little, Inc., for example, has predicted that by 1990 between 40 and 50 percent of American workers will be making daily use of electronic-terminal equipment. The Little firm predicts that some 38 million terminal-based work stations of various kinds are by then likely to be installed in offices, factories and schools, along with perhaps 34 million home terminals and at least 7 million portable terminals resembling today's hand-held calculators. Many of these terminal-based devices might initially be sold and advertised as word processors or videogame machines or personal computers, but the distinctions among those devices are already blurring. By the end of the decade, the incremental cost of equipping such machines with a communications capability will be extremely small. The two most often-discussed kinds of communications capability are videotex and teletext.

You can hear Teletext and Videotex described as electronic newspapers, printed radio, instant magazines, and computerized catalogs.

The chances are that Videotex and Teletext are all of these things, and more, including electronic mail, electronic banking, electronic shopping and on and on. We can only be sure that they represent a new family of communications media, based on written language, transmitted electronically.

They will compete with print, telephone, broadcast, and even the U.S. Post Office, in providing new ways to deliver information.

Teletext is a one-way system, utilizing an unused portion of the broadcast signal to deliver a number of text frames (called a magazine) to every home receiving the basic TV signal. The magazine can include 100 or more screens of information, updated every 10 to 20 seconds. The viewer can access the screens by use of a simple 10-button numeric keypad, attached to a special TV receiver.

What does Broadcast Teletext offer? It is spontaneous, always there, always up to date. It is personalized. The viewer selects the screens to be viewed. It is simplified. It requires only the numeric keypad for operation. And it is free to the user. Advertisers pay the bill.

A Teletext page can handle 20 lines of 40 characters each. That's about 800 characters, or about 125 words. Graphics are limited to computer-type graphs and maps. There are no photographs, no motion, and no audio. And any one TV signal can carry 100 or so screens of information, along with regular television programming.

Videotex, on the other hand, is a two-way system, connecting a home terminal to a central computer by telephone line or full two-way cable system. The user has a more elaborate typewriter-like alphanumeric keyboard.

Like Teletext, Videotex is spontaneous, always up to date, always there, rain or shine, night or day. It is intensely personal with each user communicating directly with the central computer, getting what he wants, when he wants it, in the order he wants it. It is interactive, permitting the user to send messages, conduct business, and order products and services. But Videotex also has its limitations.

Like Teletext, it contains about 125 words per screen. It is limited in graphics—no photographs, motion, or audio. It has a more elaborate typewriter-like alphanumeric keyboard, and people will pay for the service. It may be a market only for computer "freaks" or other users with special needs for expanded information sources.

Obviously, the two systems have unique attributes. Each has advantages and limitations. Each can do some things well, and others badly. How can each compete most effectively for public approval?

This depends on how each meets consumer needs. Is it convenient? Is it economical? Is it gratifying? To find answers, we are market-testing both Broadcast Teletext and Videotex.

One hundred Teletext-equipped receivers were placed in Los Angeles Homes, and three stations (CBS, NBC, and PBS) jointly tested in-home viewership of Teletext pages, and the likely purchase rate of Teletext-equipped receivers at different prices. The test is now approaching completion, and the results are being analyzed. The CBS Television Network (and NBC) have announced their intention to provide nationwide teletext services next year.

We are also preparing a market test of Videotex in Ridgewood, New Jersey, in conjunction with AT&T. In this test, we intend to learn the level of consumer acceptance and demand for a number of CBS-provided Videotex services, to develop associated creative skills, to operate the computer data-base management systems, and to test different home terminal configurations.

The test is starting now, will run for 7 months, and will involve 200 households for 3 months each. CBS will supply all editorial and advertising content, with information and transaction components provided by others, in part. AT&T will provide home terminals, computer software, and frame creation terminals—in effect, a complete Videotex system with the technical features needed for a comprehensive test.

Although our Teletext and Videotex test results are as yet incomplete, it does seem clear, based on preliminary findings, that these are exciting new media with unique attributes, and that they will achieve mass public acceptance and add to the diversity of information delivery systems. They will become new additions to the media mix, alongside radio, television, print, telephone and others.

It also seems likely that the first of the new systems to achieve mass market status will be Broadcast Teletext, because it is easy to use by non-technical people, and because the service, like commercial broadcasting, will be free to the user once the Teletext-equipped set is procured.

Their appetites whetted by Teletext, people will then be likely to demand a more diverse, more extensive, more personalized home information service, and these additional needs can be fulfilled by Videotex.

Teletext and Videotex hardware will be linked technically through a North American Broadcast Teletext standard which was developed by AT&T and CBS, along with the Canadian Department of Communications and the French National Television Network, and which has now been adopted as an American National Standard.

The standard is unique in that it combines the most desirable features of United States, Canadian, and French videotext systems. Based on this standard, Teletext and Videotex have the potential to develop into a diverse multifaceted industry, with many hardware manufacturers, many service companies such as the broadcasting and publishing companies, and many delivery systems such as telephone companies and cable TV operators, all serving the diverse home information needs of many end users.

The hardware to serve these home information needs will take many forms. First on the markets will likely be a simple set top adapter and remote keypad which converts an existing television receiver to Teletext capability, at prices ranging from \$100 to \$200.

Most homes will probably opt for integrated television Teletext terminals. These will probably add about \$50 to \$100 to the list price of electronically tuned television receivers and will probably become important to the sale of top-end models, perhaps similar to remote control. Once broadcasters provide the service, and Teletext can be demonstrated in retail showrooms, it's hard to imagine a purchaser buying a set without it.

As with Teletext, the first Videotex product will probably be a set top adapter, with remote alphanumeric keypad, also containing a telephone handset. This will link the television set with the two-way information carrying capability of the residential telephone line, and will permit subscription to Videotex services offered by CBS and others.

Rather than tie up a television set, many purchasers will opt for an integrated Videotex terminal with its own display and alphanumeric keyboard. If it occurs to you that this looks remarkably like a home computer, you're correct. Another way of getting Videotex will be the addition of a modem to an existing home computer (if it can handle the proposed North American standard).

And finally, by adding a radio-frequency tuner and a telephone interface to the home computer, we have the ultimate modular home information system, getting interactive two-way information via the telephone lines and one-way Teletext information over the air.

And so as we look ahead, we can see that people will continue to want information in their homes; Teletext and Videotex will be highly desirable ways of delivering that information, broadcasting and publishing companies will be providing the Teletext and Videotex information services, the public will look to the video home computer and television receiver manufacturers for the hardware. Teletext and Videotex will be major new additions to the diversity of communication in written, textual form.

This has been a far-ranging discussion of technological developments, Mr. Chairman, and I am appreciative of the opportunity to review them with the Committee. Let me sum up briefly if I may.

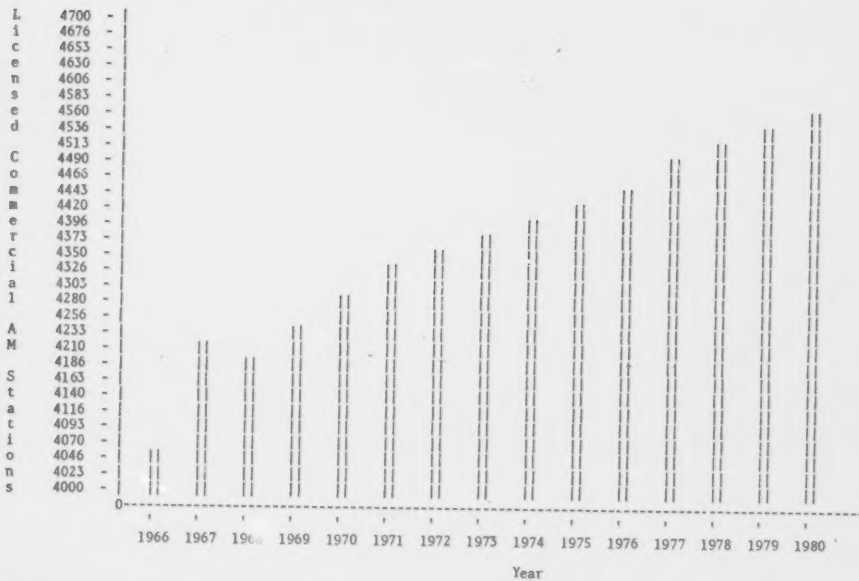
The many technologies which I have discussed have one thing in common: they all involve the use of spectrum. That includes cable television, which today relies heavily on satellite-relayed programming. It also includes Videotex conveyed through the intercity telephone network, which uses microwave radio transmission. It even includes printed newspapers like the New York Times, the Wall Street Journal, and USA Today, which are distributed to regional printing plants by satellite.

(Spectrum Slide A) The extent of usable spectrum was at first small—barely enough to support AM radio and a few point-to-point radio transmitters. (Spectrum Slide B) Then it expanded to accommodate FM radio, VHF television, and a plethora of point-to-point radio services; (Spectrum Slide C) UHF television, mobile radio; (Spectrum Slide D) satellite services, including today's fixed satellites and tomorrow's direct broadcasting satellites. (Spectrum Slide E) And the future will bring still more services. This chart, by the way, is drawn on a logarithmic scale, so that the bottom row represents nine times as much spectrum as all the rows above it.

The catalogue of developments I have just presented seems to make it clear that spectrum exploitation is limited only by transitory constraints on our technical ability to use certain frequencies. The spectrum capacity is there for us to use and use it we have and will. The only real limitations on the proliferation of services to the consumer are economic: will demand be sufficient to sustain the service. It must be left to others to draw the full First Amendment implications from these facts. But technology constraints would not appear to be an appropriate basis for First Amendment restrictions on the electronic media.

Thank you, Mr. Chairman.

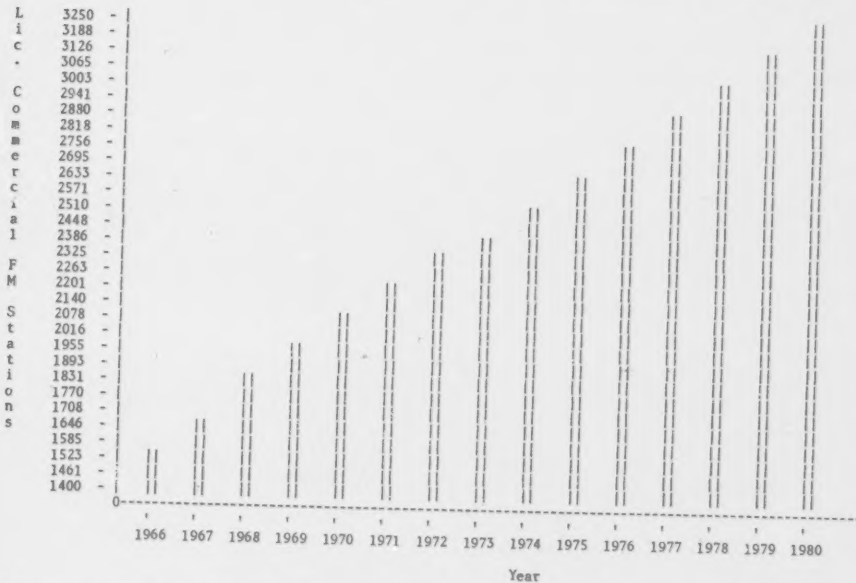
Annual & Cumulative Number of U.S. Commercial AM Broadcast Stations



Electronic Industries Association, 1981 Edition Electronic Market Data Book, citing Federal Communications Commission.

Slide 1

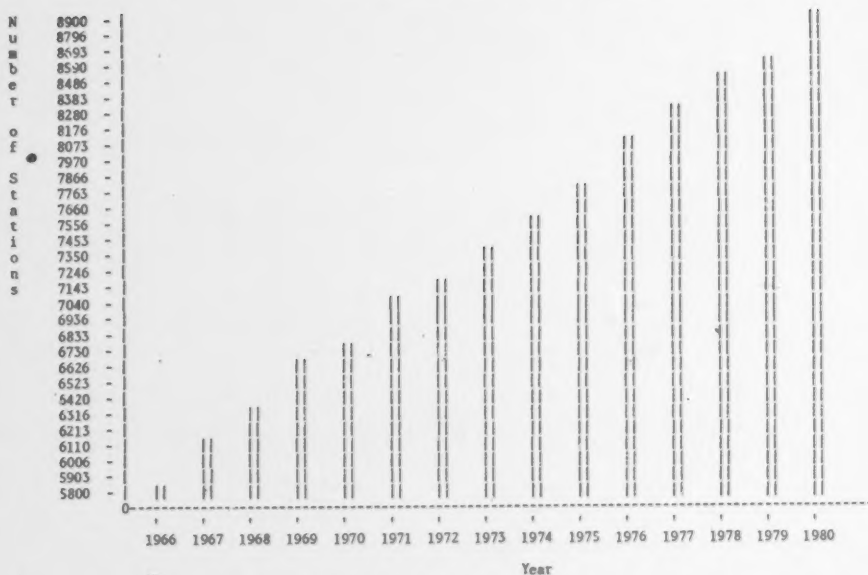
Annual & Cumulative Number of U.S. Commercial FM Broadcast Stations



Electronic Industries Association, 1981 Edition Electronic Market Data Book, citing Federal Communications Commission.

Slide 2

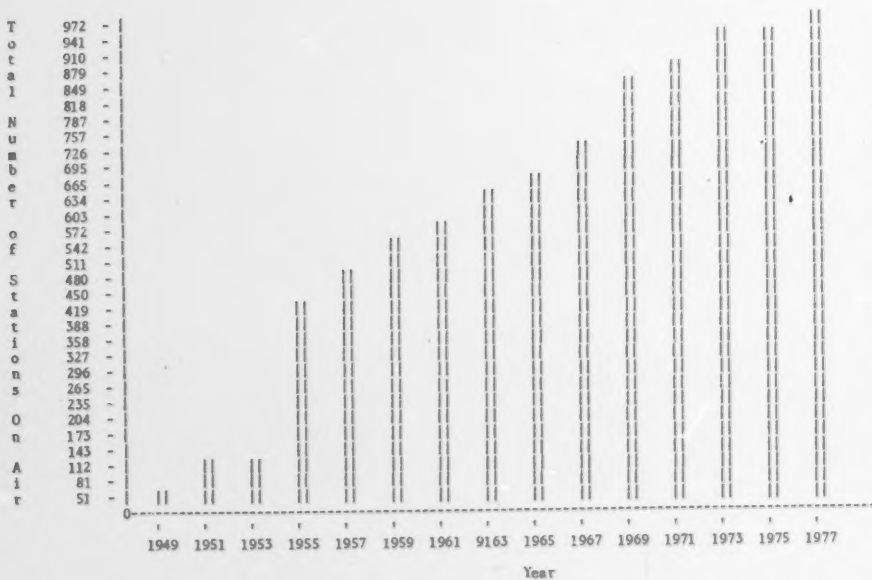
Total U.S. Commercial AM, FM & Educational FM Stations



Electronic Industries Association, 1981 Edition Electronic Market Data Book, citing Federal Communications Commission.

Slide 3

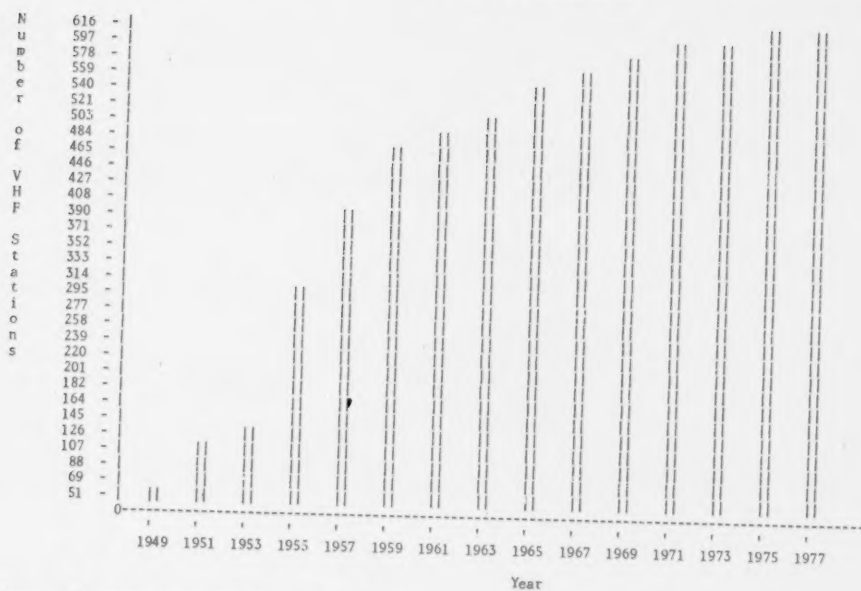
Total Number of Television Stations On Air



Source: Television Digest AM-FM Addenda Service.

Slide 4

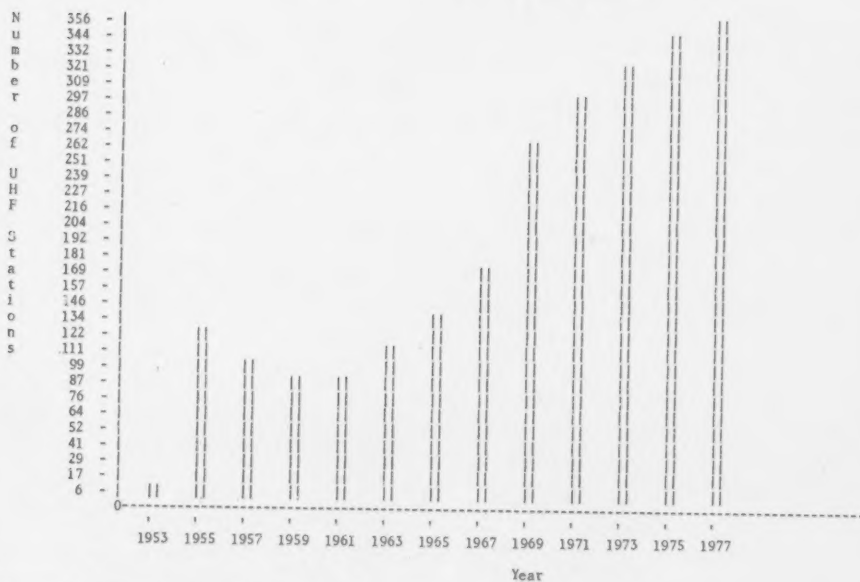
Total VHF Stations On Air



Source: Television Digest AM-FM Addenda Service

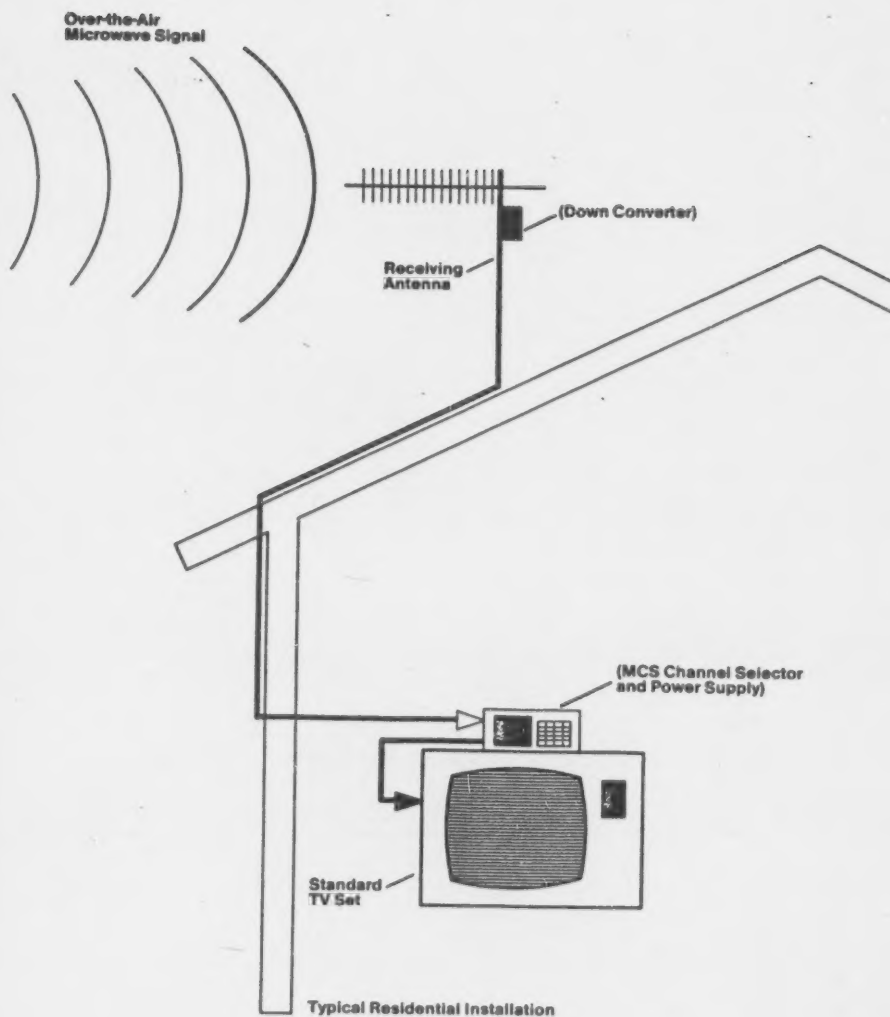
Slide 5

Total UHF Stations On Air



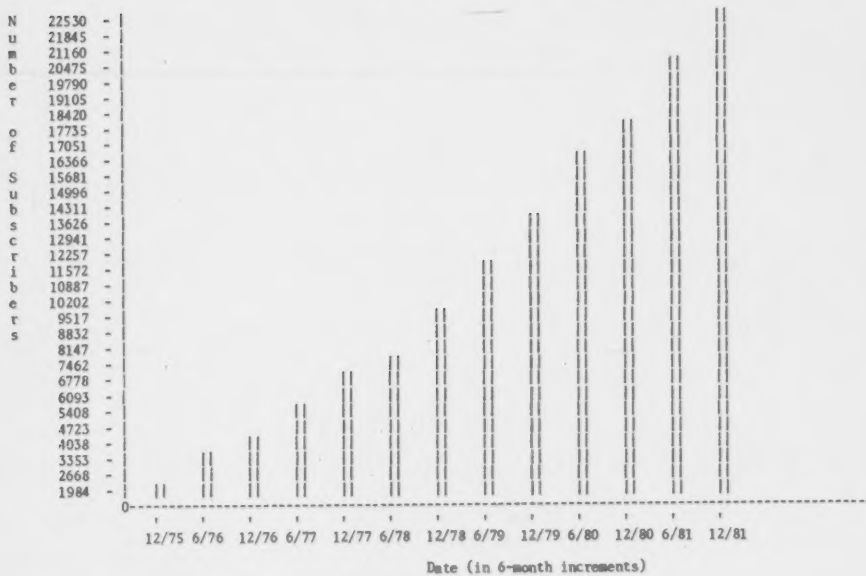
Source: Television Digest AM-FM Addenda Service.

Slide 6



Slide 7

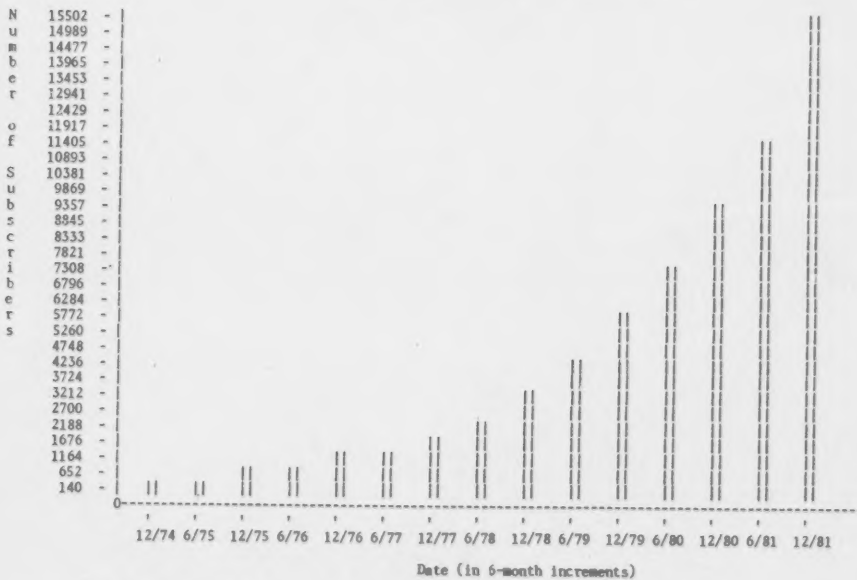
Growth of Basic Cable Subscribers (in thousands)



Source: Paul Kagan Associates, Inc.

Slide 8

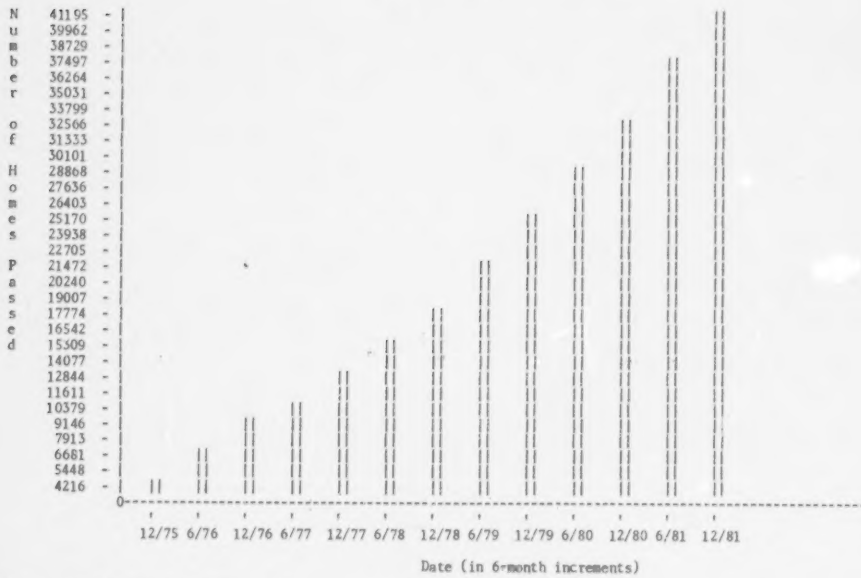
Growth of Pay Cable Subscribers (in thousands)



Source: Paul Kagan Associates, Inc.

Slide 9

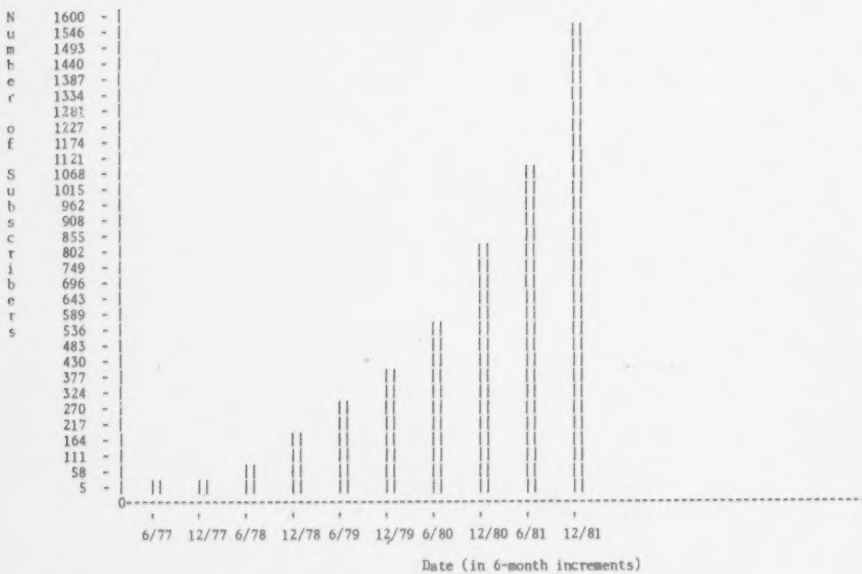
Growth of Homes Passed by Cable (in thousands)



Source: Paul Kagan Associates, Inc.

Slide 10

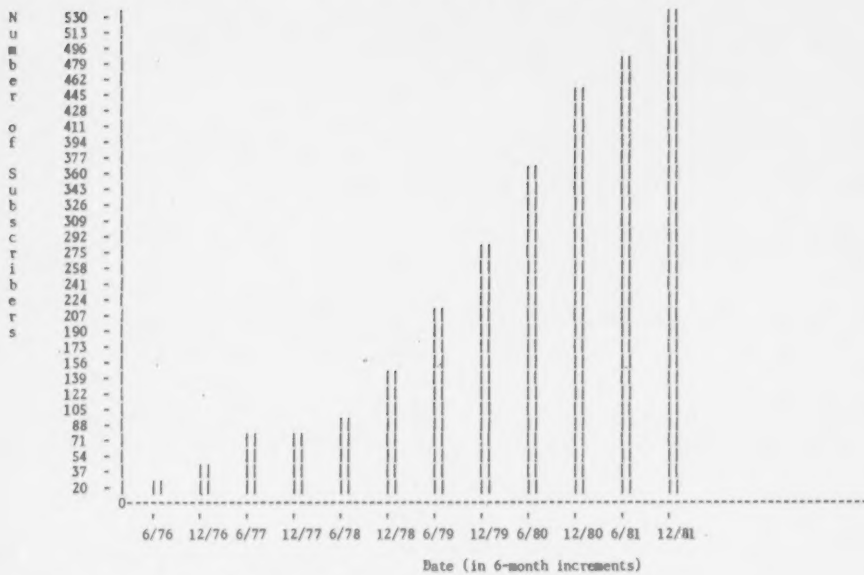
Subscription TV Subscriber Growth (in thousands)



Source: Paul Kagan Associates, Inc.

Slide 11

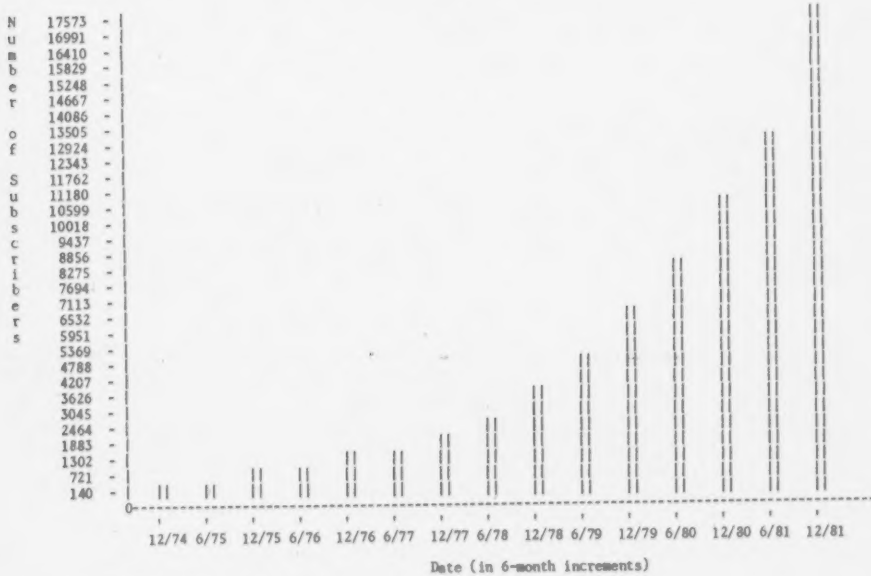
Growth of MDS Subscribers (in thousands)



Source: Paul Kagan Associates, Inc.

Slide 12

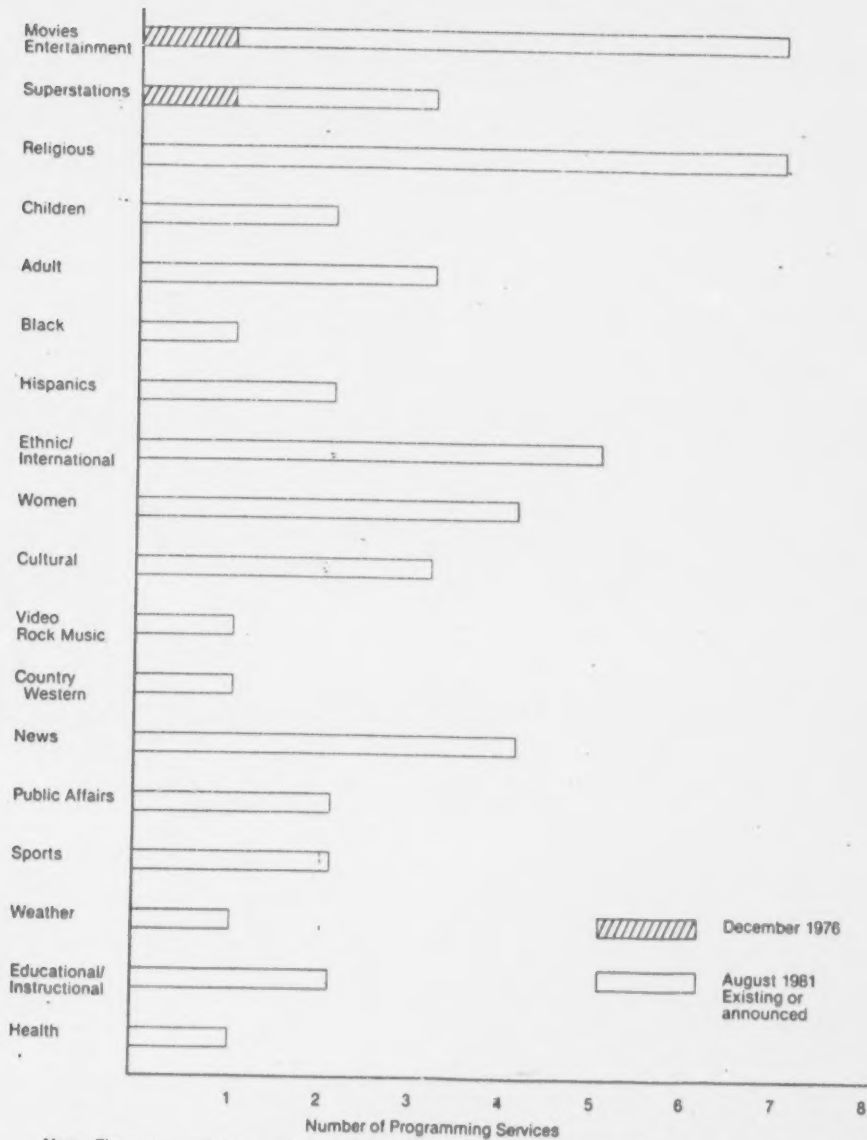
Growth of Total Pay Subscribers (in thousands)



Source: Paul Kagan Associates, Inc.

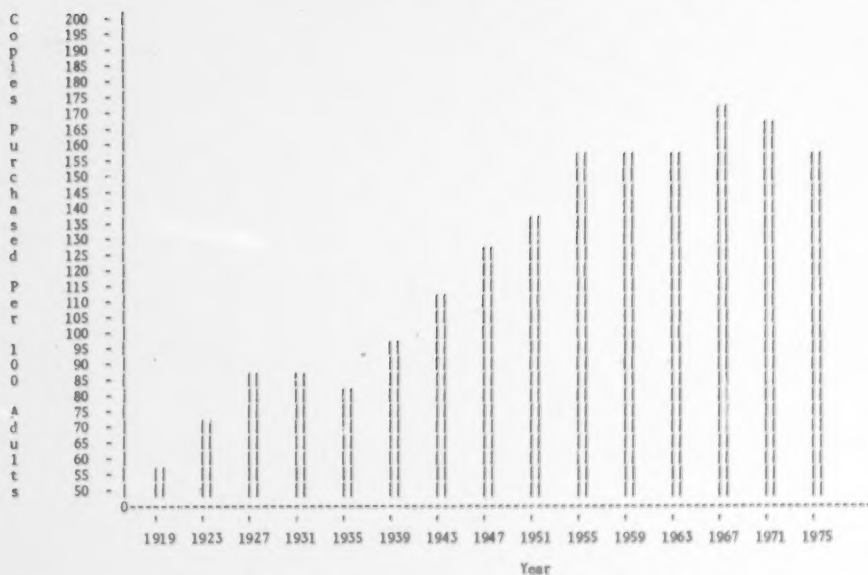
Slide 13

Satellite Delivered Cable Programming Services (Video)



Note: The majority of video cable services occupies only one programming category. The exceptions are USA Network and Satellite Program Network. As USA offers blocks of sports programming, programming geared toward children and women, and an international series called the English Channel, it has been listed in four program categories. As Satellite Program Network has separate blocks of programming geared toward three different international audiences, it occupies three spots in the ethnic/international category.

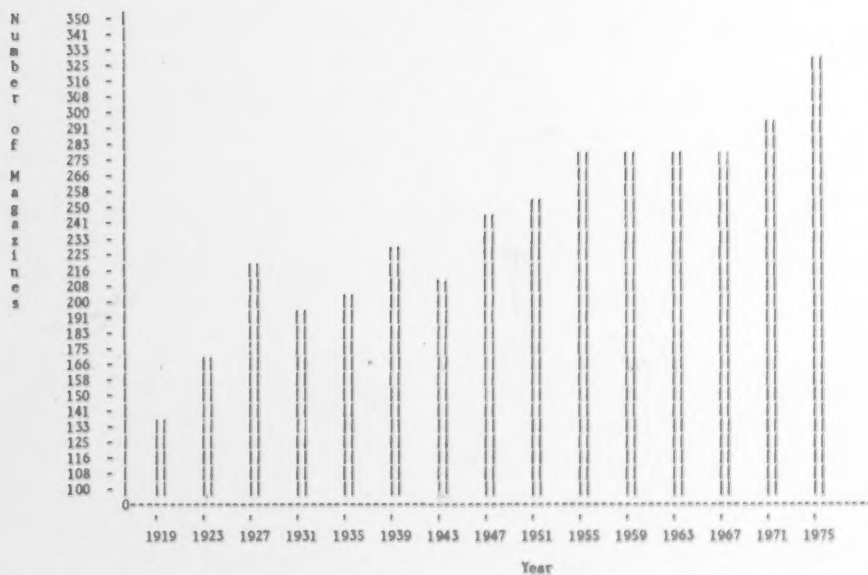
Total Single Copies of Gen. & Farm Magazines Purchased Per 100 Adults



Copies purchased per 100 adults peaked in 1969 at 169.5. Sources: Magazine Publishers Association. Population figures cited by MPA from the U.S. Bureau of the Census.

Slide 15

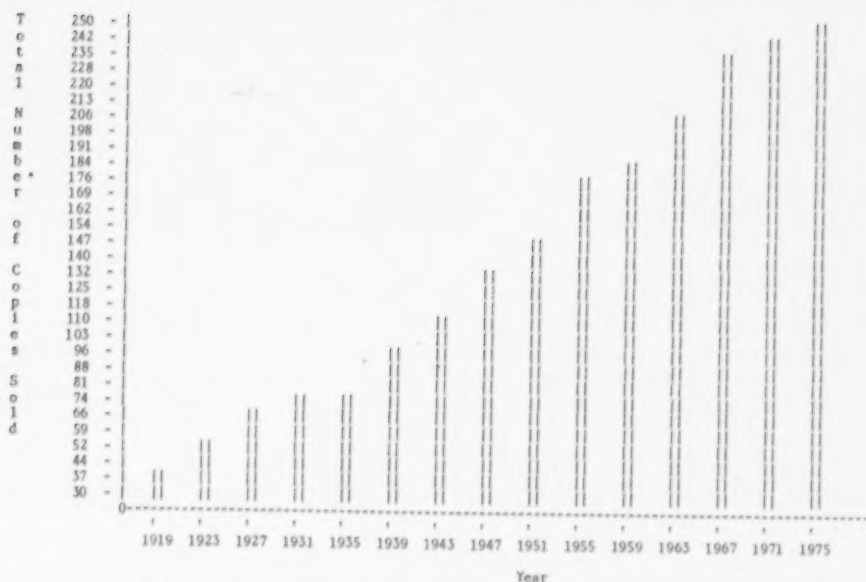
Number of General & Farm Magazines in U.S.



Source: Magazine Publishers Association.

Slide 16

Total Circulation of General & Farm Magazines (in millions)



Source: Magazine Publishers Association.

Slide 17

The CHAIRMAN. We will conclude today with Dr. Charles Jackson, who is one of the principals of Shooshan & Jackson in Washington, D.C.

STATEMENT OF DR. CHARLES L. JACKSON, SHOOSHAN & JACKSON

Dr. JACKSON. Chairman Packwood and members of the committee, thank you for the opportunity to testify today on a very important issue, the reality behind the claims we hear so often of spectrum scarcity.

My key point is: If there ever was any scarcity of electronic communications outlets that scarcity was artificial and legalistic. It grew out of policy constraints and not out of fundamental technological limitations. Be that as it may we will see in the next decade a major expansion in the number of electronic channels into every household. Even after that decade, the underlying technology for building communications systems is changing at an enormous pace. The expansion of channels we will see in the next decade should continue for the rest of this century and into the beginning of the next.

The spectrum is limited. They are not making any more of it. But it can support far more communications channels than it does today. The limits on spectrum are not the same as limits on the number of channels you can get out of the spectrum. The tradeoff is fairly simple. The more channels you want, the more you pay.

We can substitute hardware, which is expensive, for bandwidth, for spectrum, which is free. To make an analogy, the number of people you can house on a square mile of land is a function of how

much you spend. If you just put up grass huts or tents, and do not install water or plumbing, you cannot support very many people on a square mile, maybe a hundred, maybe a couple of hundred. If you install highways and utilities, you can build co-op cities and support hundreds of thousands of people in the same space. You have not increased the amount of land supporting those people. What you have done is used it much more intensively.

The same is true for spectrum. The spectrum is limited, just as land is limited, but the number of channels we can squeeze out of the spectrum is not limited the same way. Our ability to squeeze more channels out of the spectrum has changed enormously over the last several decades, and the change in our ability to squeeze out those channels has increased the number of electronic mass media outlets in our country.

We saw Mr. Smith's slide showing the vast growth in outlets. Part of that growth occurred because of the changed economics created by the new technology. To just give a flavor of how dramatic that cost change has been let me tell an anecdote. I like to collect old electronics equipment. I have at home an old AM tabletop 1930 radio. It works well. It predates the FCC. I have the original bill of sale for that radio. It is an ordinary console tabletop radio, nothing fancy. It cost \$48; \$48.13 for an AM radio. Comparable equipment costs \$5 today, and we have had substantial inflation in the intervening years.

To explain the changes in channel availability I looked at one community in the United States, Portland, Oreg., and tabulated the electronic mass media outlets available today, the electronic mass media outlets which I expect to be available in 1992, and the number of outlets that would be possible if society pushed moderately hard to increase the number of outlets. I have not tried to calculate the maximum number possible if we were willing to give up microwave radio to carry long-distance telephone calls or something like that, but rather a reasonable number that is achievable with only moderate effort.

I think none of my numbers are perfect or beyond argument. Whenever you try to make a prediction about the future, you are going to be wrong to some degree. I have displayed my numbers on that chart, and maybe if I run through them quickly and explain the calculations, it will give you a feeling for the growth that we can count on and the nature of the underlying constraints on the number of electronic mass media outlets in each community.

Right now, Portland has 11 AM radio stations. I expect that in 1992 they will have 11 AM radio stations. If the Commission had chosen to go a different route on the 9 kilohertz spacing, essentially squeezing a few more channels into the AM radio band, we would have been able to get a few more AM radio stations in Portland, making a total of 13 or 14.

There are currently 16 FM radio stations in Portland. I suspect that either in the educational or noncommercial band, or as a result of the Commission loosening slightly the technical constraints on new FM radio stations, we will get one or two more in Portland. The rules under which FM radio stations were assigned to specific communities at the beginning of FM radio broadcasting were designed in part to accommodate the technology we had then

for building FM receivers. The Commission did not pack too many FM radio stations in each community in order to make the radio stations work well with the existing technology.

If we were to look back at those decisions now and ask how many FM radio stations can we squeeze into Portland, without disruption or severe interference, using today's receivers, we can do a lot better than we did then. We can probably get about 25 or 30 into Portland.

NTIA did some studies on the expansion of FM radio broadcasting through the use of more efficient technology. My result, a 100-percent increase, is roughly consonant with the results they obtained.

A third approach to adding radio stations in Portland would be to create a new band for radio broadcasting, just as once we had only AM and then we had FM a second band. When we went to FM, we added 100 new channels, and in each community in the country added 10, 15, 16, 20, maybe in the case of a community like New York, 30 new radio stations. I believe this possibility of a new band might be what you were touching on in your quotation from Professor Pool's testimony to be given later this week.

The CHAIRMAN. I am not a physicist and I do not fully understand megahertz and kilohertz. So when Mr. Smith just said we can have maybe a couple of hundred additional radio stations in Washington, I will take his word for it. But I am curious if what Prof. de Sola Pool says is correct.

Dr. JACKSON. It is correct. If you wanted to get 200 new radio stations in Portland, you could do it. There are several places you could get the spectrum. For example, you could take away some of the land mobile reserve spectrum which is sitting there idle.

The CHAIRMAN. Some of the what?

Dr. JACKSON. There is spectrum set aside for future growth of land mobile radio services. It used to be set aside for UHF television, but the Commission took it away from television and set it aside for land mobile. There is plenty of spectrum there that is sitting idle. Nobody is using it at all. You could allocate that to a radio broadcast service which would be roughly the quality of AM, shorter range. It would not have the coverage at night that AM radio has. That would allow hundreds of radio stations in communities like Portland. You could take two or three UHF channels, maybe even just one UHF channel.

If you try to get hundreds of stations into Portland with just one UHF channel, you are pushing it. You could get 100, 150 pretty easily. If you wanted to get multiples of 100 on one UHF channel, I think you would have to work hard. You could do it, but it would be expensive.

UHF channel 37 is not used for broadcasting anywhere in this country. It has been set aside and left idle for use by radio astronomers. We could take that channel without dislocating any broadcaster in the country and turn it over to radio broadcasting and have 150, 200 new channels in Portland.

Now, if we did that, the radio astronomers would lose a window into the universe. We could make that up, spend \$20 billion and build an observatory on the back side of the Moon which would be

superior in many ways to observatories we have today, but it is a tradeoff between one use of the spectrum and another.

I must confess that I strongly doubt that we will ever choose to create a new radio band, but we could do it.

An interesting aside is to point out that *Red Lion*, the Supreme Court case which upheld the fairness doctrine, was a radio broadcasting case, and the Supreme Court based its justification of the fairness doctrine on scarcity.

The next line on my chart shows an increase in radio services in Portland coming about as cable systems grow. One of the cable systems in Portland is currently providing 25 radio channels over the cable. You can hook the cable to your FM radio as well as to your TV set. Then you can tune your FM radio to the signal on the cable system. That cable system I would estimate will be able to provide about 90 channels by 1992.

The CHAIRMAN. How many?

Dr. JACKSON. Ninety. They could actually provide those 90 channels in a year or two. They are only providing 25 signals because of economic constraints. They are retransmitting on those 25 cable channels all the local FM stations that they can pick up plus, I believe, two satellite services. I am not positive on that last point, but I believe they are carrying two satellite radio services. However, it would cost them little to add the additional channels to the cable system.

Technologically speaking, if the cable industry and the FM receiver industry got together and designed a special receiver for cable radio, cable systems could carry hundreds of channels in every community. Today, FM radio has been patched onto cable TV in a very low-cost fashion. The FM band in the spectrum, which is 20-megahertz wide, a little wider than three TV channels, is located in the spectrum between television channel 6 and channel 7. Therefore, when you build a cable TV system, if you build it so it can carry both channel 6 and channel 7, you also build it so it can carry the FM spectrum, the FM band, whatever you want to call that region. So when you build a cable system, you get the ability to transmit those FM radio stations for free.

Let me go on now and talk about video services. Right now, Portland only has five over the air television broadcast stations. But there are currently pending before the FCC applications for full power stations on four more channels. There are about eight or nine applications, two or three on each channel. The Commission has to sort them out. So, I assume that the Commission can sort out those competing applications for full power UHF within the next decade, and by 1992 Portland will have eight or nine full power television stations in Portland.

When the Commission designed the UHF table of assignments, they decided which UHF channels were to be available for licensing in each community, in a clever fashion which reduced the cost and complexity of home receivers for UHF television. The Commission designed a very weird and complex set of rules, but those rules reduced the cost of building UHF television receivers and made the growth of UHF-TV, which we saw in the earlier presentation, possible earlier than it would have been otherwise.

But, they achieved this cost savings at the expense of diversity. VHF channel 4, for example, is used in 63 different cities in this country. It is used here in Washington, in New York, it is used in Boston. It has to be spaced apart, but not too far apart. Channel 40, which is a UHF channel, is used in only 23 different cities.

The Commission's allocation plan allowed us to get three times as much use out of channel 4 as out of channel 40. Now, that was a tradeoff the Commission made. They made receivers cheaper so they gave up some diversity. I think that now, however, new technology would allow us to build UHF receivers which would accommodate much tighter packing of UHF stations in the UHF band.

If we did that, Portland could have 10 to 15 full power UHF television stations, giving us a total of 15 to 20 full power over the air television stations in Portland.

I suspect that the magnitude of the change that we would have to go through, though, is something that our political system will not tolerate. The Commission would have to say, yes, the current table of allocations in UHF is obsolete; we are going to redesign that table of allocations so there are twice as many UHF stations in each community. Many new UHF stations would have to move to a different frequency, which would require buying some new hardware at the cost of several hundred thousand or a million dollars. Politically, I just do not see the Commission doing that, even if the return for that expenditure to society is a substantial increase in the diversity of over the air programming.

There is another route to additional TV outlets in Portland—low-power television. Right now, according to one list I checked, there are 33 applications at the FCC for low-power television stations. Looking at them very quickly, those 33 were on only 13 different channels. That means that there are about three or four applicants for each channel.

I have looked closely at low-power television availability in several other communities, drawing on the analogy of other communities, and on the information I obtained by looking at summaries of the applications in Portland, I would guess that about 10 of those 13 channels will become available for low-power television in Portland.

So, by the end of the decade we should have about 10 low-power stations in Portland as well as the 8 or 9 high power stations.

Now, a minute ago, when I was talking about high power television, I said if the Commission changed the UHF table of allocations, we could have a lot more full power UHF stations in Portland. The same thing applies to low-power television. If we changed the technical constraints governing UHF assignments, we could have more low-power television in Portland. Of course, we now see a little bit of broadcasting at frequencies other than the traditional UHF and VHF. In the high UHF band, there is a service called a multipoint distribution service. Again, Mr. Smith touched on that. Right now, only one multipoint distribution service station is licensed in Portland. I believe it is a pay movie service, and competes with the cable system's pay programming services. The Commission is considering transferring some essentially idle frequencies, to a broadcast service. It is these frequencies that CBS and

Contemporary Communications have applied for in their multi-channel broadcast experiment.

If the Commission were to transfer these frequencies, to broadcasting, we could open up many more over-the-air broadcast channels in Portland. The exact number of channels is problematic. It also depends on how much spectrum the Commission decides to allocate to this service. It also depends on the technical rules: whether the FCC fits channels tightly together or only loosely together. If they want to pack channels tightly together in the spectrum, we will get more channels in Portland.

In my table I put down a probable number of 20 new channels in Portland, but I regard that as a soft number with a lot of give in each direction. I think we could push it as high as 40 if we worked hard, but I doubt if we will. Of course, we could go higher in the spectrum. Both the Japanese and CBS have experimented with transmissions at so-called super high frequencies.

These frequencies are normally used for microwave communications, and have the technical constraint, that you have to be able to see the transmitting site from the receiver. They are restricted to line-of-sight transmission. There is a super high frequency transmitter right over there on that little tower transmitting back to C span. I understand it is a half-watt transmitter.

If we took some of that super high frequency spectrum, we could easily allocate a band for 20 or 30 new TV stations in every community. In fact, if we pushed hard we could have 60 or 100 TV stations at the super high frequencies in every community. To do that would require going out and finding spectrum that is currently allocated to other uses and taking it away from those uses.

Of course, we will have another service in the super high frequency region of the spectrum by 1992, and that is direct broadcast satellites. I anticipate that relatively few direct broadcast satellites will be serving this country because of economic constraints. In my chart, I show six channels of direct broadcast programming available in Portland by 1992. That assumes probably two DBS operators serving the Portland area.

Technically we can do far better than that. We could easily have 25. Maybe if we worked real hard we could have 50 channels of DBS service to Portland, but I rather doubt that we are willing to pay for that large number of channels, and of course right now cable systems are being built in Portland. They will be the route to the greatest growth in channel availability in Portland.

Part of Portland is already served by an older cable system, about a quarter of the community, which has 36 channels. A new cable system is being built in Portland with 108 channel capability. That should be completed by the end of next year. So, I put down probable 1992, 108 cable channels. Actually, that is probable for late 1983, early 1984, conservative estimate.

We could put more cables in in Portland. If we wanted to spend the money, we could put 30 cables in front of every household and have 2,000 TV channels into each household. We just do not want to spend the money! The scarcity of TV channels into households grows not out of any limits on what we can build, but out of how much we are willing to spend for a reasonable number of channels.

The CHAIRMAN. What you are saying is, to the reasonable person, there is no technical scarcity. You may point out that we may not need 2,000 channels coming into the house, but there is no technical scarcity?

Dr. JACKSON. That is correct. The scarcity grows out of legal and economic roots.

In total, we have about six over the air television services in Portland today. By 1992, I see a total of 153 channels of television service available to every household in Portland, and if we pushed reasonably hard, we could achieve 230 television channels.

Perhaps the most interesting element of those numbers is the fact that the difference between what we are going to have in the next decade and what we would have if we pushed very hard is not very big. We are going to see a substantial explosion of video channels into households in Portland, the achievement of a substantial fraction of the total number of channels that could be economically supported, whether or not—

THE CHAIRMAN. Emphasize that again. We are not going to have the explosion because of cost. It is the same reason we are not going to have 25 newspapers in this town.

Dr. JACKSON. That is right. Economics is controlling, not technical scarcity.

The CHAIRMAN. It is not scarcity. It is that we cannot afford 25 newspapers in this town.

Dr. JACKSON. That is correct. Now, one thing I did not talk about on that chart is text services, the Videotex and Teletext that were discussed by two of the previous three witnesses. It is not that I do not think that is an important service or that it will have an enormous impact on society, but it is because it is just beginning in Portland. It is very hard to count correctly the number of channels or services that will be available in Portland.

The cable television system is experimenting with a rather simpleminded version of Teletext today. They intend to go farther. To the best of my knowledge, none of the over the air broadcast stations are carrying a Teletext service on their subcarrier, the vertical blanking interval. It is available in a sense at every telephone line. You can buy a computer and plug it into the telephone network at any telephone, and it becomes a limited Videotex publishing source.

So, one count of the number of outlets, potential outlets in Portland for electronic publishing is the number of telephones, and there is one in every household.

Interestingly enough, there is also a Reuters Service on the cable system's institutional network which allows for interactive capability. You can ask the cable system for stories on the Reuters News Service within the last 3 days—about hearings before the Senate Commerce Committee, for example—and the cable system will deliver these news stories. The cable system has not faced up to the fairness doctrine issues. What do they do if someone does not like the story on the Reuters wire?

I would like to make one last observation on text services. Text is enormously dense and compact. One single television channel dedicated to broadcasting only text could broadcast about a million

characters per second. That is a ball park figure. And it could do that every second of the day.

Now, what we see in the design of current Teletext systems is a tradeoff between using lots of capacity in the terminal for capturing and storing that broadcast information versus transmitting that information again over and over. The broadcast Teletext system that CBS and its affiliate who is operating in Los Angeles transmitted the same information once every 30 seconds.

If we had some storage capacity in our home terminals, we might be able to transmit only the pages that changed. In that case, even a TV subcarrier, which is a very limited capacity, far less than 1 million characters per second, would have 100 times the capacity or 1,000 times the capacity of the systems we are using today. So I think if there is ever an area where there is not scarcity, it is broadcast text services. They consume far less spectrum per word uttered than anything else we have.

The CHAIRMAN. Say that again.

Dr. JACKSON. A broadcast Teletext service, when you transmit one word through the spectrum, uses far less spectrum to carry that word than does ordinary radio carrying speech, or does television carrying the video signal. It requires 100 times more spectrum to carry a spoken word than a written word. It takes 1,000 times more spectrum to carry a picture of a person speaking a word than it is to carry the spoken word.

The CHAIRMAN. So therefore, if I understand what you are saying, the scarcity argument is even less valid for the transmission of the written word.

Dr. JACKSON. Yes, exactly my point. I will get back to the issue of scarcity in a minute. Maybe a last point on this issue of channel availability and diversity. Those projections I gave for 1992 are based on 1982 or 1978 technology. But we are in a period of very rapid, intense innovation. We understand, by and large, the fundamental laws governing communications. The key technologies that support communications systems, that govern our ability to build larger memories for terminals or computers, and our ability to transmit signals at higher frequencies are in a period of enormous change. Every indication is that this change will continue over the next decade or two. Everything we know about where we are in the lab, about fundamental limits on the performance of devices indicates continued program. Therefore these new technologies will lead to major expansions of potential capacity far beyond those I outlined.

Here are two examples of the impact of new technology. As we add storage technology to our terminals, we will be able to use more of the day to get useful performance out of each channel. Recently, Sony and ABC announced a new pay TV venture where you would have a home video cassette recorder hooked up to the TV antenna. They will transmit the pay movies between 2 a.m. and 5 a.m. The consumer's recorder would record them, and later play them back through a decoder later when he or she wanted to see the pay movie. In essence, ABC created new channels in every community, one for themselves, and also channels for others, too, since anybody else can use that technology.

One can make a plumbing analogy here. There are two ways to make sure you have enough water in the house to operate appliances that require large flows. One is to have a small pipe and a storage tank. The other is to have a big pipe. In industrial buildings, we run in big pipes and run them through the risers and everything, and everybody has access to a large flow whenever they need it. In most houses, however, we put storage tanks. That gives us the same capability of large flows when we need it.

There is another technology that will be important: bandwidth compression technology. Dr. Harrington spoke of this briefly. By the end of the next decade we will be able to, at relatively low cost, build a box that compresses the bandwidth of a television signal so that we will not have to use channels as wide as the current channels. We could split current channels TV into four new channels by 1992. Again, I rather doubt that the Commission would do that.

There is another tradeoff we could make. We could take high-definition television, which has much better picture quality than we have today, and compress that fourfold, fivefold, and transmit it through an ordinary TV channel.

The myth of spectrum scarcity has confused communications policy for a long time. In my view, the major cause of that perceived scarcity has been legal constraints on our ability to use and build new channels. In the case in which the FCC effectively asserted jurisdiction over the cable TV industry and which was upheld by the appeals court and cert. was denied by the Supreme Court, the *Carter Mountain* case, the FCC denied a microwave license to a common carrier on the ground that that common carrier's customer, a cable TV system, would create economic competition for a television station that would harm the service provided by that television station.

There was no issue of scarcity, yet a radio license was denied. A voice was silenced in a community, and the future of cable television was set back because of the economic handicaps the FCC placed on cable television in that proceeding and in many others. It is interesting to think about the fact that several newspapers are transmitted today by satellite, and it would seem to me that using the reasoning that the Commission and the courts used in *Carter Mountain*, that if the FCC felt that the USA Today was going to create economic competition to channel 9 here in Washington and maybe reduce channel 9's advertising revenues and thus the quality of programming that it provides to the community, they could deny the microwave license to the satellite system that carries USA Today's signal here into the community for exactly the same reason as they did in *Carter Mountain*.

Whether the Commission or the courts would go so far as to say USA Today might harm the Washington Post and therefore would deny the microwave license to protect the public is unclear.

It is interesting to note that following FCC approval of Satellite Television Corporation's application for a direct broadcast satellite, the National Association of Broadcasters announced that they were going to appeal the FCC decision. That is, the NAB is going to use the legal process to create barriers if possible to the growth of DBS and of additional outlets in this country.

Again, I will reemphasize, there is no doubt in my mind that policies which have restricted the growth of cable television and limited the number of over the air broadcast stations to levels far below the levels technology allows are responsible for whatever scarcity exists today.

Now, if we look at the *Red Lion* decision, the court said, because spectrum is scarce, we uphold the fairness doctrine, yet there is a circularity. The Government limits the number of channels of communications, and then finds that scarcity compels a reduction in our traditional freedoms.

The number of communications channels we derive from the spectrum depends on our skills and our willingness to pay for those channels. Dr. Buchsbaum and Dr. Harrington made this point over and over again in slightly different terminology. Any scarcity of electronic media comes from legal or economic constraints, not technological constraints.

The growth of electronic media outlets over the next few decades should occur in a free environment, one where the first amendment rules. We should not wait until the new outlets are operating before giving their editors first amendment rights. If the new institutions, and this is most true for electronic text systems, if the new institutions grow under freedom, they will understand, value, and support that freedom. If, while they grow, they are shackled by the Government, they will become comfortable in their shackles and like the NAB today support the extension of those shackles to others. No doubt by 1992 Comsat will have joined the NAB and will be opposing any new entrants that come along then.

Thank you very much for this opportunity.

The CHAIRMAN. I think both your history and your perspective are quite accurate. It will be amazing, the allies we will see in 1992 that are now enemies.

I have no questions. I appreciate very much your patience in waiting. Thank you so much.

Dr. JACKSON. Thank you.

[The statement follows:]

STATEMENT OF DR. CHARLES L. JACKSON

Chairman Packwood, members of the committee, thank you for the opportunity to testify today on the technological reality behind the oft heard claims of spectrum "scarcity"—claims which provide the rationale for regulation of the electronic mass media in this country. Let me summarize my testimony in four sentences:

If there ever was any "scarcity" in the spectrum, that scarcity was artificial and legalistic—any "scarcity" that ever existed was created by the lawyers, not the engineers!

Even if one assumes that there was spectrum scarcity earlier—in 1927 or 1934 or 1959—I see no justification for that position today.

Even if one insists that "scarcity" still exists today, we will see a major expansion in the number of electronic channels—of video, audio and text, into the average household in America over the next ten years.

Even beyond 1992, technological progress will substantially expand the number of communications alternatives.

THE ROOTS OF SPECTRUM "SCARCITY"

All physical resources are scarce in varying degrees. The limited, finite, non-expandable electromagnetic spectrum is one such limited resource. We can use the spectrum, along with other resources—transmitters, receivers, coaxial cable, et cetera—to create communication channels. Physical limits to the number of such

channels are not binding constraints. Economic limits are. One of the fundamental insights of communications engineering has been to develop and extensive understanding of the tradeoffs made between bandwidth—i.e. spectrum—and other resources when building communications systems. That theoretical understanding, and engineering practice and experience, all show that the limited spectrum can support many more communications channels than it does today. The trade-off is simple: the more channels you want, the more you pay. We can substitute hardware, which costs money, for bandwidth, which is free.

That trade-off changes as time passes. Over the years, new technology has lowered the cost of providing additional channels using the spectrum. We can build systems which, if not beyond our reach 20 years ago, would have been far too expensive for practical use. This new technology has substantially increased the number of electronic mass media outlets in our country during the last few decades. From 1960 to 1980, the number of cable television subscribers increased by a factor of 28! The number of FM radio stations grew by 600 percent. But even these dramatic changes of the recent past are modest compared to the changes we can expect in the future.

I have looked at one community in the United States, Portland, Oregon, and have tabulated the electronic mass media outlets available there today, the outlets I expect to be available in Portland in 1992, and the number of outlets which would be possible if society were to push hard for the development of new electronic media outlets. Table I below shows my estimates. None of my numbers are perfect or beyond argument—except perhaps my count of existing television stations. Only the future will show how close I have come to a correct estimate of the 1992 situation. I feel that they are reasonable projections. But, numbers alone do not tell the whole story. We have to look at the reasoning behind the numbers.

PORTLAND RADIO

Portland currently has 11 AM radio stations. That count includes only those stations licensed to Portland, although signals from AM stations outside Portland can be picked up in Portland. I doubt if any new AM stations will be licensed in Portland in the next ten years. If the FCC were to squeeze the stations closer together on the AM dial—technically speaking, to adopt a 9KHz AM Channel spacing—and to use the new channels so created as low power local channels, then perhaps two or three new AM radio stations could begin operation in Portland.

Portland has 16 FM radio stations. It may be possible to squeeze in one or two more if the FCC were to change its technical rules to take into account the reduced interference from stations using directional antennas. If the FCC allowed interference calculations to be based upon actual transmitted power, to take account of any terrain factors reducing interference, channel operation if the transmitters were located at the same site, then we could probably double the number of FM Radio stations in Portland and, by extension, in the entire United States.

The quickest route to allowing many more radio stations is to allocate a new band of frequencies for radio broadcasting. If ten megaHertz of spectrum were set aside for such a service, and the service used single sideband AM on 10KHz wide channels, a thousand channels providing a service intermediate in quality between AM and FM would become available. There is unused spectrum which could be allocated for such a service. For example, there is 26 megaHertz of spectrum, 902 to 928 MHz, which is allocated for industrial use. If we took part of that spectrum and used it for communications channels, there would be less available for industrial applications. One result of such a transfer would be that the cost of the industrial systems using the 915 megaHertz frequency would increase slightly because those systems would have to be built and maintained to tighter tolerances.

Another place to get the spectrum would be to use frequencies now in the land mobile reserve. The result of taking these land mobile frequencies would be either a decrease in the number of land mobile channels or an increase in the cost of land mobile radios at some time in the future—at the time when those frequencies would have been released for land mobile use. I strongly doubt that we will choose to create a new radio band, but it could be done with relatively little dislocation. If a thousand channel radio service were created near 900 megaHertz, I would estimate that 150 to 300 channels could be assigned to Portland.

The biggest real increase in aural or radio services in Portland will come as cable systems grow in Portland. Right now, one cable system in Portland provides 25 radio channels over its cable although more channels are technically possible. That cable system has dual cables. When the cable system activates the second cable, capacity will double. I estimate that the cable system will be able to provide 90 FM channels by 1992. If the FCC were to strenuously push manufacturers of FM receiv-

ers to improve adjacent signal rejection of their receivers, it might be possible to carry 75 or more FM stations on a single cable. Similarly, if the cable industry and the receiver industry got together and designed a special receiver for cable radio, then cable systems could carry many more channels than they can when interfacing with receivers optimized for reception of over-the-air signals.

PORTLAND TELEVISION

Today Portland has only five over-the-air television broadcast stations. Additionally, the signal of a station in Salem, Oregon reaches Portland. There are currently applications pending at the FCC for four more full power stations in Portland—all UHF.

One of these applications is for a frequency not assigned to Portland by the FCC. So, I am not sure whether all four can be granted. In the next ten years, those three or four licenses will have been granted. However, we could have many more than four new UHF stations.

In the early 1950's, the FCC cleverly designed the UHF table of assignments to reduce the cost of UHF TV receivers. But this reduction in the monetary cost of receivers was achieved at the cost of sacrificing many channels of communications. Compare the service provided by channel 4 in the VHF band with the service from channel 40 in the UHF band. Channel 4, in the VHF band, was assigned by the FCC for use in 63 cities. Yet channel 40, in the UHF band, was assigned for use in only 23 cities—only about a third as many stations as are available on channel 4. New technology allows us to build UHF television receivers at reasonable cost which are compatible with more intensive use of the UHF television band. If we were to adopt such technology, Portland could have 10 to 15 full power UHF TV stations. Combining those with the existing five VHF stations leads to a total of from 15 to 20 full power, over-the-air television stations in Portland.

Low power television offers another route to additional television outlets in Portland. There are currently 33 applications at the FCC for low power television stations in Portland. These applications are for only 13 different channels so, clearly, there are conflicting applications. Without studying these applications in detail, I would estimate that about ten of them can be granted. Of course, if we installed improved UHF television receivers, we would increase the number of possible low power stations to between 15 and 25.

Multipoint distribution service [MDS] uses microwave frequencies (2150 MHz) to carry television signals. Right now, only one MDS station is licensed in Portland. But the FCC is considering transferring some other, essentially idle, frequencies to the MDS service. If the FCC transfers these frequencies (and I expect that they will) then between 15 and 30 MDS channels will become available in Portland. If the FCC worked very hard on the technical standards for MDS, it might be able to expand the number of channels to between 30 and 60. If that were done, then around 40 MDS channels would become available in Portland.

Television broadcasting can use other parts of the microwave spectrum besides the MDS frequencies. The Japanese have experimented with broadcasts in the Super High Frequency Region [SHF]. CBS has requested permission from the FCC to experiment with broadcasts in this region. I think it unlikely that the FCC will set aside frequencies in this range for television broadcasting but it could allocate a band capable of supporting 20 SHF television stations in Portland.

Direct broadcast satellites provide another source of television channels. I expect that one or two broadcast satellites will be providing service to the west coast, including Portland, by 1992. Since each system will have three or four channels, a total of between three and eight DBS channels will be available in Portland by 1992. If the economics support more DBS systems, the frequencies are available for more channels—up to a maximum of about 25 channels. Here, the binding constraint is likely to be the marketplace, not the FCC's rules.

Without a doubt, cable television will substantially increase the number of television channels available in Portland. Portland has already granted cable television franchises. Construction of a 108 channel system serving all households in the eastern franchise area (the area east of the river with three fourths of the Portland population) should be finished by the end of 1983. An older system, originally built in 1952 and now upgraded to 36 channel capacity, serves the west side of Portland. Every household in Portland will be passed by one system or the other. I doubt if the 108 channel system will add any capacity in the next decade. The 36 channel system will probably upgrade capacity when the supply of programming expands.

BEYOND 1992: THE LONGRUN VIEW

The projections I just gave for 1992 are based on today's technology. But we are in a period of rapid and intense innovation in electronics and communications. Our understanding of the fundamental laws governing communications is remarkably mature. However, innovation proceeds at an incredible rate in the key technologies supporting communications systems. New transmission media such as fiber optics and radios capable of operating at higher frequencies than are practical today promise major expansions of capacity—far beyond those I outlined. Improved electronics will expand the performance of existing communication channels. Addition of storage capability to home terminals will double or triple the effective number of channels. Such use of electronic storage was begun recently when ABC received permission from the FCC to offer pay television at night. Video cassette recorders in each subscriber's home record the pay signal for later playback. In effect, ABC found a way to "add" a new channel to every community in the country. By 1992, improvements in integrated circuits will allow us to compress the bandwidth of a television signal enough to allow broadcast quality television to be transmitted in a band only a quarter the width of today's TV channels.

All these are improvements we can count on. But, it is instructive to go back a decade and look at the Sloan Commission study on Cable Television or a little further back and look at the 1968 report of the President's Task Force on Communications policy. Neither report discussed fiber optics or multichannel MDS as a competitor to cable television. The Sloan Commission felt that it was "at least conceivable" that the capacity of urban cable systems could rise as high as 80 channels. The authors of those reports were neither stupid nor timid. Rather, progress outstripped their imagination.

OTHER ISSUES

So far I have described the trade-off between spectrum and other resources as simply a trade-off of diversity against money. Other trade-offs are relevant. In particular, we can trade-off spectrum and money against quality. There are 100 channels on the FM radio band, each 200 kiloHertz wide. These wide channels allow transmission of stereo high fidelity music to relatively low cost receivers. We could have divided the FM radio band into 2,000 lower quality channels, equivalent to the channels on AM radio. If we had done so, then Portland would have 300 radio stations today if that many people wanted to broadcast in Portland. But we chose high quality music over diversity. We face a similar tradeoff today. High definition television, with greatly improved picture quality, is possible today. But, each high definition television channel requires enough spectrum to carry four of five normal television signals.

There would be far more electronic media channels available today if the incentives for innovation were different. When the telephone industry finds a way to double the number of telephone circuits it can put on a microwave radio channel, it is allowed to do so, and to keep any economic benefits created by the increased efficiency. In contrast, if a broadcaster found a way to accommodate another station on his channel, the FCC would probably give that station to a competitor. Innovations which save spectrum are rewarded in the telephone industry and would be punished in the broadcasting industry. This is not just a theoretical argument. In 1960 the United States had 474 television stations on the VHF band. Today there are 631 stations on the VHF band. In the early 1950's the Bell System began sending some of its telephone traffic by microwave radio. At that time Bell's microwave radios could fit only 2,100 telephone circuits into the microwave band. Today's equipment can fit 36,000 telephone circuits into the same band. The "spectrum" efficiency of the broadcast system did not improve significantly while the corresponding efficiency of the telephone system improved by 2,000 percent! While I do not believe that a 2,000 percent improvement would have been possible in broadcasting, a 200 percent improvement would clearly have been possible in FM radio and UHF television.

CONCLUDING COMMENTS

The myth of spectrum "scarcity" has confused communications policy for a long time. I hope that today's hearing is a step towards reducing that confusion. But let me point out the major cause of that perceived "scarcity"—legal restraints on our ability to build and use new channels.

I will give one concrete example of that general proposition. In the early 1960's the FCC denied a microwave license to a common carrier because the carrier planned to use microwave radio to bring in additional TV signals to be carried by

two cable TV systems in Wyoming. The FCC's decision was appealed. The court summarized the FCC's reasoning in the following words:

"The Commission concluded that it would not serve the public interest, convenience, and necessity to grant appellant's application. Its reasoning was essentially this: that to permit appellant to bring in outside programs for the community antenna systems on the basis proposed would result in the "demise" of the local television station . . . and that the need for the local outlet outweighed the improved service which appellant's proposed new facilities would bring to those who subscribed to the community antenna systems."

Interestingly enough, the common carrier argued that the FCC license denial abridged the First Amendment rights of the cable system. The court would have none of that argument, and disposed of it quickly:

"It may be assumed that any denial of a license to transmit radio or television programs keeps off the air, and hence deprives the public of, the material which the applicant desires to communicate. But that does not mean that the Commission must grant every license which is requested . . . Quite the contrary is true: A denial of a station license, validly made because of the standard of "public interest, convenience, or necessity" has not been met, is not a denial of free speech."¹

The court upheld the FCC. A microwave radio license was denied because of the economic impact of additional channels of programming in a community. There was no other applicant for the frequency. Scarcity was not an issue.

That decision was only one of many by the FCC and the Courts limiting or handicapping new electronic channels, out of a desire to limit or control the economic impact of those new channels. Only a year ago, the National Association of Broadcasters asked the Commission to deny Satellite Television Corporation's application to operate a direct broadcast satellite on the grounds, in part, that a DBS satellite would cause economic harm to existing television stations. And, following FCC approval of STC's application last week, the NAB announced it will appeal the decision.

There is no doubt in my mind that policies which have restricted the growth of cable television and which have limited the number of over the air broadcast stations to levels far below the levels technology allows are responsible for whatever "scarcity" exists today.

The Supreme Court, in its *Red Lion* decision, saw the essential issue of broadcaster's First Amendment rights as rooted in spectrum scarcity.

" . . . it was essential for the Government to tell some applicants that they could not broadcast at all because there was room for only a few."

"Where there are substantially more individuals who want to broadcast than there are frequencies to allocate, it is idle to posit an unabridgable First Amendment right to broadcast comparable to the right of every individual to speak, write or publish . . ."

" . . . Because of the scarcity of radio frequencies, the Government is permitted to put restraints on licensees in favor of others whose views should be expressed on this unique medium."²

Notice the circularity. The Government limits the number of channels of communication to levels far below those technically feasible. Then the Government finds that "scarcity" compels a reduction in our traditional freedoms.

The spectrum, along with all the other resources we use to build communications systems is limited. But, the finite nature of the spectrum does not translate into a simple, fixed number of channels. Rather, the number of communications channels we will derive from the spectrum depends on our skills and on our willingness to pay for those channels. Any scarcity of electronic media outlets comes from legal or economic constraints, not technological constraints.

The growth of electronic media outlets over the next few decades should occur in a free environment—one where the First Amendment rules. We should not wait until the new outlets are operating before giving their editors First Amendment rights. If the new institutions grow under freedom, they will understand, value and support that freedom. If, while they grow, they are shackled by the government, they will become comfortable in their shackles and, like the NAB today, will support the extension of those shackles to others.

¹ *Carter Mountain Transmission Corporation v. FCC*, 321 F.2d 359 (1963).

² *Red Lion Broadcasting Co. v. FCC*, 39 S.Ct. 1794.

TABLE I.—ELECTRONIC MEDIA CHANNELS IN PORTLAND, OREG ¹

	1982	Probable 1992	Achievable 1992
Aural:			
AM	11	11	14
FM	16	18	30
New band	0	0	200
Cable	(¹)	90	150
Total	27	119	394
Video:			
Full power	5	9	15
Low power	0	10	20
MDS	1	20	40
SHF broadcasting	0	0	20
Direct broadcast satellite	0	6	25
Cable	(¹)	108	108
Total	6	153	228
Total (aural and video)	33	272	622

¹ Building.

TABLE II.—NATIONWIDE SUMMARY OF ELECTRONIC MEDIA CHANNELS

	1982	Probable 1992	Achievable 1992
Aural:			
AM	4,800	5,300	6,200
FM	4,700	5,200	9,400
New band	0	0	¹ 40,000
Cable	(²)	(³)	(⁴)
Total (cable)	9,500	10,500	55,000
Video:			
Full power	1,000	1,300	2,000
Low power	100	2,000	4,000
MDS	200	2,000	4,000
SHF broadcasting	0	0	2,000
Direct broadcast satellite (channels)	0	6	25
Cable (percent of households)	(32)	(65)	(65)
Total (cable and DBS)	1,300	5,300	12,000

¹ 200 per city.² Little.³ 50 per city.⁴ 75 per city.

Data in Tables I and II are based upon the following sources:

NOTES

Existing TV Stations: "TV Factbook," Stations Volume, 1982-1983 edition.

Historical Statistics: "TV Factbook," Services Volume, 1981-1983 edition.

Common Carrier Microwave Evolution: "Engineering and Operations in the Bell System," p. 336.

Low Power Applications: Low Power Applicant List, April 1982.

Existing Radio Stations: "Broadcasting Yearbook," 1982.

[The following information was subsequently received for the record:]

SHOOSHAN & JACKSON, INC.,
Washington, D.C., October 1, 1982.

Hon. BOB PACKWOOD,
U.S. Senate,
Russell Senate Office Building,
Washington, D.C.

DEAR SENATOR PACKWOOD: In the course of the hearing last Tuesday, 28 September 1982, you asked me if Professor Pool of MIT was correct when he asserted that: "If one UHF television channel were used for radio broadcasting, we could have hundreds of radio stations in every community."

He is correct. One UHF television station could support hundreds of radio stations in every community.

Let me explain, briefly, how that could be done and the nature of the broadcast service which would be provided.

A television channel, UHF or VHF, occupies 600 times more spectrum than an AM radio station. Yet, AM technology will work in the UHF frequency band. Several years ago, Motorola demonstrated a mobile radio using AM technology and operating in the UHF band. If we were to divide one UHF channel into 600 AM radio channels we would also need to decide how many of these channels could be used in any specific community. That decision is a complex one, requiring consideration of cost and the desired range of service desired. A restrictive combination of low receiver cost and wide broadcast service area would allow about 20 percent of those 600 channels, or 120 channels, to be assigned to each major market. And, of course, in more geographically isolated markets, such as Burns, Oregon, we could allow many more, perhaps 300 of those 600 channels to be used.

If we choose diversity at the expense of slightly higher receiver cost, say an extra five dollars, then we could probably count on using 40 percent of those 600 channels in every major market—a total of 240 radio stations per market.

A second point: I mentioned in passing that electronic text communications consume even less radio spectrum than do voice or video transmissions. Please allow me to expand upon that point.

A spoken word lasts a third of a second. If that word is broadcast, then during that third of a second, the speaker's voice or voice and image, if on television, occupy the entire frequency bank assigned to the station.

In contrast, an AM station could broadcast about 90 words of text during that same third of a second. And, a TV channel could carry 100,000 words!

Thus, there is even less technical scarcity for text services than for radio and television and less justification for regulation based upon scarcity.

Sincerely yours,

CHARLES L. JACKSON.

[Whereupon, at 11:50 a.m., the committee was adjourned, to reconvene upon the call of the Chair.]

FREEDOM OF EXPRESSION

THURSDAY, SEPTEMBER 30, 1982

U.S. SENATE,
COMMITTEE ON COMMERCE, SCIENCE, AND TRANSPORTATION,
Washington, D.C.

The committee met, pursuant to notice, at 9:30 a.m., in room 235, Russell Senate Office Building, Hon. Bob Packwood (chairman of the committee) presiding.

OPENING STATEMENT BY THE CHAIRMAN

The CHAIRMAN. The hearing will come to order.

I do have an opening statement, but I might say to the audience and to the press, we will change the order of our witnesses slightly. Professor Van Alstyne was delayed by about an hour and has now left North Carolina and is in the air. And Professor Pool may be in the air. There is fog all about. We do not know where he is.

Professor Krattenmaker, did not have to fly today because he comes from Georgetown University, so he is here. When I finish my opening statement we will start with Professor Krattenmaker, and then go on with whichever of the other witnesses arrives first.

I have been informed that Professor Pool just came in.

On Tuesday this committee held the first of what will be a series of hearings on the subject of freedom of expression, and that day was limited to hearing the testimony of four expert witnesses on the communications technology of the present and the future.

Each of those witnesses emphasized that there are effectively no technical limitations on the utilization of the spectrum for the electronic delivery of information. Therefore, spectrum scarcity is no longer a basis for Government regulation of program content. The policy framework which governs our communications media was written in a time when scarcity was a real concern. Technology limited use of the airwaves, and because it was argued that these airwaves were owned by the public and because we thought that the outlets were limited, the Government stepped in, broadcasters were licensed, and the content of transmission was regulated.

Despite the communications revolution that we heard about Tuesday, this legal framework remains. Section 301 of the Communications Act still says, "It is the purpose of this chapter to maintain the control of the United States over all channels of interstate and foreign radio transmission."

Spectrum scarcity and the laws and regulations which flowed from that concept remain deeply embedded in our Nation's policy. Too few people have questioned these laws. Too many people are content to merely repeat the old rationales. For example, let me

quote from the Christian Science Monitor editorial supporting regulation of cable, which appeared last Monday:

Government regulation of the airwaves has long been supported on the grounds that the airwaves belong to the public, that unlike printing presses they are scarce resources used by broadcasters as privileged trustees of the public.

Let me quote from a 1973 Supreme Court decision, which is still the law: "Because the broadcast media utilizes a valuable and limited public resource, there is also present an unusual order of first amendment values."

That is why we are meeting again today. On Tuesday, scarcity as a technological fact was disproven. Therefore, today we can look at what remains a fact of policy: the unusual order of our first amendment values, despite the fact that the premise of scarcity, upon which the limitation of first amendment rights for broadcasters is based, is no longer valid.

To put it in layman's language, the witnesses said, and said in conversation afterward, that within reason we could have as many television and radio outlets in Washington, D.C., or New York or Los Angeles as we could rationally want; that the real limitations are not technical; that whatever limitations there are may be economic, in that a market cannot sustain 200 or 300 or 400 radio stations. But it is clear that if the market could sustain them, we could technically have them, and that includes television stations as well.

Professor Krattenmaker, if you do not mind, we will go ahead and start with you and give Professor Pool a chance to get his thoughts together and relax a bit before he goes on. I know you got here early enough to be prepared to begin.

Professor Krattenmaker is a professor of law at Georgetown University Law Center and has a long and extensive record in the study of the first amendment, specifically as it relates to broadcasting. Professor, it is good to have you with us.

STATEMENT OF PROF. THOMAS KRATTENMAKER, PROFESSOR OF LAW, GEORGETOWN UNIVERSITY LAW CENTER

Mr. KRATTENMAKER. Mr. Chairman, thank you.

With your permission, I think I will report to my students that it is the official conclusion of the U.S. Senate that there is no fog at Georgetown University Law Center. My students have often said exactly the reverse as I left the room, and I will be happy to throw that notion at them.

I was trying to think about the historical significance of today. As we are of course all aware, 55 years ago today Babe Ruth hit his 60th home run in the 1927 season, thereby exploding the myth that baseball was a sport made up of the sacrifice bunt and the suicide squeeze.

It also occurred to me it was that same year that the Federal Radio Commission was established, and maybe we can do a mini-Ruthian feat by exploding today's myths about the differences between the broadcast media and other kinds of media.

I appreciate very much your inviting me here. Mr. Chairman, as you know, I have submitted prepared testimony to the committee.

If it is satisfactory to you, I would not read that testimony, but simply offer it for the record.

The CHAIRMAN. The entire statement will be in the record and you may proceed as you wish.

Mr. KRATTENMAKER. Thank you. I thought what I might do is try to summarize what I think are the main points of the testimony I submitted to you. I think that essentially the conclusions I offer fall out along five lines.

First of all, it is the case, I think, that broadcasting regulations have been consistently upheld that would routinely be struck down on First Amendment grounds if applied to most other media.

Secondly, the Supreme Court has told us that broadcasting is different because it is electronic. That statement I think was factually accurate but analytically irrelevant. There are no greater constitutional justifications for imposing these regulations on broadcasters than on, for example, publishers of daily newspapers.

The third point I argue in my submission to you is that even if the distinction between the broadcast media and the printing media was unintelligent, at least it was not unintelligible—until very recently. That is, it used to be that we all knew who operated in the regulated zone and who operated in the protected first amendment sphere. But today that line is blurred and within 10 years I think it is going to be completely erased.

How is it that, using a categorization between broadcasters and all others, for example, we are going to categorize lines of type-script appearing on TV screens, transmitted initially by satellites to newspapers, rewritten in the editorial offices of newspapers, and then distributed by newspaper owners to our homes over leased cable facilities?

I think that to the extent that there was any intelligible line between the broadcast and the print media, that line will be entirely erased within the next 10 years.

The fourth principle I argue is that what all this means is that the Government is now or very soon will be in a position to assert that either the regulatory model or the protective model governs most daily communications. The judicial precedents which were initially designed to distinguish broadcasting will be equally useful to encompass almost all communication that is not typed up and xeroxed and handed out.

The CHAIRMAN. Let me ask you something here. I agree with you on the judicial precedents. It seems to me the courts are stuck and they must go one of two ways. First, the Supreme Court one day must reverse itself and say, no, everything we have said before is irrelevant. They could do it by saying there no longer is scarcity; they could find a rationale for doing this if they chose to.

There is a second possibility—the courts frequently bend over backward to uphold administrative agencies in factfinding if they can, and the tendency of the Federal Communications Commission and of the Federal Government generally is going to be to stretch their power to the limit. There will be a tendency to take anything that can possibly be defined as broadcasting within the jurisdiction of the FCC. You can say, fine, this FCC will not do that, but who knows how long this FCC will be there?

Therefore, one day the Supreme Court will be presented with a case in which the FCC has made an attempt to regulate a genuine newspaper which has been electronically transmitting news. The Court will face that decision.

Mr. KRATTENMAKER. Senator, I think that is precisely correct. Indeed, I think that is the last principle, if you will, that underlies the testimony I submitted to you.

But what I am very firmly convinced of, Senator, is that they are certainly going to confront that option that you just described. They are going to confront the option of being able to apply a fairness doctrine, a personal attack rule, a ban on advertising of certain products, to many aspects of the print media.

And I think it is fundamentally wrong that we should ever put our public officials in the position where they can contemplate having that sort of an option.

The CHAIRMAN. I know what the temptation would be. You look at the polls on the news media and they usually rank roughly, in terms of approval, where members of Congress do. Sometimes they are above us and sometimes below us, but now and again the general public is mad about some stories or they ask why do we have all this grisly news? I can just see the combined power of the Government and an adverse public opinion. I can just see where it would lead.

Mr. KRATTENMAKER. I think that is right.

The other thing that would happen, Senator, is, as I think happened, for example, in the latest Supreme Court case dealing with the first amendment rights of the electronic media, the CBS against the FCC case, there I think undoubtedly what influenced at least the Commissioners was the thought, here is the President of the United States who wants time to talk about his political campaign, and all we are going to do is take 5 or 10 minutes away from "Dallas" or "Happy Days."

That is, one can always say that what we are doing is talking about speech that is more important or of a higher order of priority. And I think it is quite easy when it is a cause that you believe in. Your speech always sounds a lot more important than what the other fellow is talking about or what the other woman is listening to.

The CHAIRMAN. How was that FCC decision justified? Those were not licensees they were dealing with.

Mr. KRATTENMAKER. No, they were not. A peculiar aspect of the case that I do not believe has been sufficiently commented upon, Senator, is that the networks in their capacity as networks—and that is the capacity in which they were regulated here—the Carter-Mondale committee wanted to buy time from CBS, ABC, and NBC as networks. Those companies use the electronic media in the same sense in which you and I use the electronic media. That is, they lease time from AT&T, which you do when you pick up a telephone and which CBS does when it sends its program signal out to its affiliates.

And the Supreme Court nevertheless affirmed the Commission's application of this Federal statute in a way that seemed entirely oblivious to that fact.

The CHAIRMAN. Do you know if the networks raised that as a defense? Was the issue ever argued?

Mr. KRATTENMAKER. Sir, the networks specifically and strenuously argued the absence of Commission jurisdiction over them before the D.C. circuit. When the D.C. circuit held adversely, they obviously deliberately did not raise that issue on appeal to the Supreme Court. Only they could tell you when they did not do it.

They did, however, make note in the brief of the fact that they were not using any scarce electronic communications resource, or at least were not doing so any more than anyone else who might lease time from AT&T. And the Court was utterly oblivious to that.

Indeed, the Court's opinion talks about the Commission's decision being a rational allocation of the spectrum among competing uses. If the Court means that to be responsive to what CBS said, then I think that we have upon us already the situation you talked about in your opening statement, Senator. That is, many firms other than CBS, including many firms that ultimately communicate to individual citizens via print media, many of those firms either receive their information over leased long lines or transmit it along the way over the electromagnetic spectrum.

And I do not believe that there is any way in principle that those firms are distinguishable from the CBS television network.

The CHAIRMAN. Go ahead. I did not mean to interrupt.

Mr. KRATTENMAKER. I think, Mr. Chairman, that you really had driven me to my final point, and I appreciate that. I was simply going to suggest that if bureaucrats are confronted with the option of applying the broadcast model to a wide variety of print and other kinds of media, that I believe that the risk to the first amendment rights of all of us is very substantial.

Rather than asking questions like, does the person whom we seek to regulate use the electronic media, I believe that what we need to do is simply ask the question, does the proposed regulation achieve purposes consistent with first amendment values by the least intrusive available means which are applied evenhandedly to all media that create the evil sought to be cured.

And I believe that anything, Mr. Chairman, that this committee can do to rivet the attention of public officials or of courts on that question and divert their attention from the meaningless and really entirely unhelpful question, is this a user of a scarce resource, will be to the great benefit of the American public.

The CHAIRMAN. Well, as you indicated in your testimony, everything is ultimately a scarce resource. Newsprint is scarce. You could use scarcity to say that anything can be regulated by the Government. Some day you may run out of sand, I suppose.

Mr. KRATTENMAKER. Certainly. I do not think there is any question about that.

I noticed that some of your witnesses on Tuesday, made that point and they are quite certainly correct. I think sometimes we perceive there to be some unusual scarcity with respect to the broadcast media, for a very simple reason. That is, the licenses are given away.

When you give something away at a price of zero, you will always see a lot more people standing in line than there are pieces of things to hand out. If the Government gave away shoes, we

would all of a sudden perceive that shoes are scarce. The fact that I bought the pair of shoes I am wearing does not mean that leather, or paper and glue which my shoes are probably made from, are not scarce.

The CHAIRMAN. Let me ask you this. There was a time when the rationale was that somehow if a signal went through the air then it used this scarce resource. But the telephone wire was a common carrier, and we did not attempt to censor—I will use that word, censor—telephone it in the same sense in which we did broadcast.

But then we got to cable and for some reason we looked at a wire which was like a telephone wire and we said, no, that is broadcast.

One, how can you rationalize that? And two, if we can say that about a cable wire, is there any reason we cannot say that about a telephone wire?

Mr. KRATTENMAKER. Well, your first question, how do you rationalize it, I am tempted to reply, there is supposed to be published within about a month a law review article of mine that talks about that issue, and I think it goes on about 30 pages long on that. I will try to be somewhat briefer.

I believe the Commission was able to do that—and I do not mean to justify what it did—by first convincing the Court that it had authority to regulate cable systems in order to prevent their doing damage to the broadcast industry. That principle was then converted into the notion that we can then regulate cable along the lines of broadcasting.

The first argument probably should have been rejected on the grounds that there is no evident public policy why we should prefer broadcasting over cable. The second argument is a non sequitur, but it has nevertheless been not only advanced by the Commission, but indeed adopted by the Supreme Court in the so-called *Midwest Video II* case.

Your second question is probably more interesting, or at least can be answered without referring to a 30-page law review article with a hundred footnotes to it, and that is that I do not see how one can maintain a distinction very well between cable and the telephone company, given the tenuousness of the argument that there is some broadcast connection to cable.

The CHAIRMAN. Which does not exist with telephone. Both of the wires are laid at the sufferance of local governments and they issue licenses as to who can go where. Both of them, although they differ a bit in quality, can carry in essence the same kind of message.

Mr. KRATTENMAKER. They can both carry the same message; and notice that both are intruders into the home and are accessible to young children.

So indeed, I think that is a perfect illustration of the argument I tried to make in my prepared testimony, and that is that the right question to ask of any of these regulations, whether we are talking about a requirement of a right of access or we are talking about a fairness doctrine, is to ask whether the regulation is consistent with first amendment values, whether it achieves its own purposes by the least drastic means, and then whether it is applied evenhandedly.

Now, it may be that, for example, cable and telephone company operations differ from, for example, MDS or television facilities in

that they are natural monopolies, and therefore there may be some reason why, for example, an access requirement might be applied both to the telephone company and to a cable system, but not to a broadcast station.

I do not mean to argue for or against access today, but simply to point out that the notion that the way to resolve that question is to ask whether it is an electronic communications entity that enters the home is really utterly beside the point, I believe.

The CHAIRMAN. But by "access" we mean exactly that. We do not mean censorship. We mean that everybody will have an equal shot.

Mr. KRATTENMAKER. I think that is quite correct, yes.

The CHAIRMAN. Now, when we say "broadcast," we use it to mean those methods of communication to which the FCC will apply equal time, the fairness doctrine, and all their other content regulations.

Mr. KRATTENMAKER. Yes. In fact, I think what we probably mean is AM and FM radio and VHF and UHF broadcast licensed television stations.

The CHAIRMAN. And now cable, we have said.

Mr. KRATTENMAKER. Maybe now cable. I think what I am trying to suggest is that we used to know exactly what we were talking about, Senator. If we had this discussion in 1959, we would not have had any question in our minds what is a broadcaster and what is not.

And what has happened is that the development of technology has shown us that we were really wrong all along. There is no, if you will, platonic or a priori conception of broadcasting that sets it apart from all other forms of communication.

The CHAIRMAN. Now again, therefore when we use the term "broadcast," we in essence are defining what we want as broadcast. We then say, all the rest of our "broadcasting" doctrines apply, equal time, and the fairness doctrine.

We are now saying it of cable. Some of the new direct broadcast satellites are going to be licensed as broadcasters and will have the same standards of fairness, equal time, access and what-not applied to them. Now, given that, I want to take some for-instances.

Many radio and television stations editorialize, and of course they are subject to equal time and fairness and what-not. Let us assume that NBC decides to editorialize and sends off its editorial to the receiving satellite and it comes back to Earth and enters your home on the television screen.

Today, an opponent could demand fairness or, if it were in a political campaign, equal time.

Mr. KRATTENMAKER. Correct.

The CHAIRMAN. Change only NBC to the Washington Post, and the Washington Post now sends off its editorial via the satellite into your home on the television screen. Would there be any way under those circumstances that you could intellectually rationalize a difference and say that the NBC editorial is subject to fairness and equal time, but the Washington Post editorial is not?

Mr. KRATTENMAKER. I do not think there would be any way, Mr. Chairman. I do not think there would be any way, as you said, that you could intellectually do it. I think the lawyers can draw the dis-

tinctions. In some of my writing I have tried to confine the breadth of some of the Supreme Court holdings.

But it is a holding action and there is in fact no principled line of distinction between those two types of communications. I cannot imagine what it is that someone would suggest the difference would be.

The CHAIRMAN. I am not sure how I would make the argument. If I were presenting the Post's case in court, I am not sure how I could distinguish the facts, which is of course the basis you have to lay when you start a trial. Your only hope would be that when you reached the Supreme Court, the Court would just do what they did in the *Miami Herald* case—hold for the newspaper and not bother to worry about attempting to rationalize the difference.

Mr. KRATTENMAKER. Yes, I think that is what they would do.

The difference in the two cases that you hypothesized is that in your second example, the Washington Post does not hold an FCC license. Presumably, it did what it did by leasing some time from a transponder operator.

The CHAIRMAN. But neither does NBC hold a license.

Mr. KRATTENMAKER. Neither does NBC in that case. And to the extent that the Commission might authorize a satellite carrier to operate on a common carrier basis and deliver material into your home, it is not necessarily going to impose a fairness doctrine on that individual. And that would be, if you will, the legal explanation for it.

But I think what you have suggested so well, Mr. Chairman, is that those are just labels, common carrier and broadcaster, and without some more facts such as the presence or absence of many competing satellite operators, we do not really have any principled basis for distinguishing the two cases.

The CHAIRMAN. Let us look at another for instance. Let us go from satellite transmission to transmission through a cable system. Today we are sending all kinds of news through the cable system. You can sit in your motel room and read a whole variety of news. At the moment, it is not particularly controversial news, and I understand why it is not controversial news. If it were, they become subject to all the problems of response and equal time and fairness, so you can find out about the weather and the traffic reports, but very seldom something controversial.

In any event, a great deal of information is now going over that cable, and as this country is wired this will increase, I do not know, ten, a hundred times. My hunch would be whatever we predict for 10 years from now will be too conservative. We will have been too conservative in our guesses. There will be no limit to what is going to go over cable.

Now, if the Washington Post transmits its message through the cable, which we now call a broadcast medium, is there any rational way that you can say that the Post is not subject to fairness and equal time, but if the cable company publishes an editorial it is subject to those controls? If the only real difference is who originates it, is there any way to rationalize that?

Mr. KRATTENMAKER. Again, I think there probably is not. In fact, to add a footnote to your hypothetical, as you know, the specific example that you suggested with, I suppose, the deletion of the name,

The Washington Post, is going on in many places in the country. Many newspapers are already providing some kind of videotext service over cable.

The CHAIRMAN. Well, CBS gave a good demonstration of videotex and told us what is now going on in Los Angeles on an experimental basis. News on videotex is quite broad, but again, it is not particularly controversial. Lots of ads and lots of sports scores.

Mr. KRATTENMAKER. You are right. That may be one reason for it. I did mean to make the point that apparently a number of newspapers are finding this to be a good source of revenue or an additional way of bringing their product to the people. I think that cable is a very good example, because it would make us ask whether the Supreme Court had in mind some kind of rational, principled limits to some of the different suggestions it has made about scarcity or about media pervasiveness.

I think that my own judgment would be that given the breadth of the statements the Supreme Court has made in its opinions that unless they are to take back many of the implications of what they have said, there would not be any way to distinguish cable. Probably more importantly, if you did distinguish cable, I think once again you would be doing it on what is ultimately a false premise. That is, you would be saying, well, cable is not as pervasive as broadcasting, or is not pervasive in exactly the same way.

But what I mean to be suggesting is that the question of pervasiveness is not really the issue, because it is all directed at this categorization business. Are you a broadcaster or are you not? So even though it might be done, perhaps, Mr. Chairman, by arguing, for example, that the consumer makes a more overt considered decision whether to admit cable to his or her home, and that the material for the cable is not given away for free, so it does not appear to be scarce.

Those kinds of distinctions could possibly be made, but you are also quite correct that all that would do is distinguish cable from broadcasting. It would not distinguish the cable operator from the newspaper.

The CHAIRMAN. Now, the third for instance. On Tuesday, Dr. Buchsbaum from Bell Labs testified. Of course he is very enthused about optical fibers and what Bell is going to do with them. He says that we will be able to carry on a telephone line made of optical fibers voice, data, and video information. This information will be received on one instrument. You will not have a separate telephone and a separate radio and a separate television set, and you will be able to transmit both ways with this single piece of equipment.

At the moment we do not call that telephone line "broadcast." Now, when we are able to do that with our telephone line, is there any rational way that you can say that it is significantly different than cable?

Mr. KRATTENMAKER. No, there is not. There is not at all. Now, again, that does not mean that you could never regulate what comes over that system. That is, it does not mean that if such a system were developed, then AT&T or the Bell Co. could decide to deny access to all Democrats or to all Republicans, whoever it did not like at the time. That is, certain regulations might still be per-

missible, but the idea again that you would be able to do it by some kind of categorizing route, I think, would be—

The CHAIRMAN. You would have a hard time in court making a distinction between an optical fiber carrying everything and a cable carrying everything, that one somehow is broadcast, as we define it, and the other is a common carrier.

Mr. KRATTENMAKER. That is right. That is why I tried to suggest in my prepared statement that what we have from the FCC and the courts are really after the fact rationalizations. Radio was thought to be a toy, a gadget, a gimmick in 1927, not a means of communication and information, and so naturally it was to be subject to a lot of regulation, and what we see in the FCC reports and in the Supreme Court opinions are a lot of after the fact rationalizations that were initially offered because, well, we all knew radio was different and did not require much elaboration.

I think we have learned now that that is just not the case, that there are resources out there, and there are ideas out there, and resources can be used to convey ideas from one place to another, and it does not necessarily make any difference which resources are used for that end.

The CHAIRMAN. The problem will be that if we let the Federal Government make these decisions, we are going to start to erode the faith of the public in the fairness of the Government, I fear. I think Justice Stevens in his dissent—I believe it was in the *CBS* case—alluded to this problem in the FCC's decision. It was a four to three decision; all four Democratic commissioners voted to allow the Carter-Mondale committee access to the networks, and the three Republican commissioners voted against it.

Mr. KRATTENMAKER. That is correct.

The CHAIRMAN. In his dissent, Stevens did not say that party politics were the reason for that conclusion, but he does say it is very clear how the public might begin to draw those kinds of conclusions, that you are going to have partisan decisions in the FCC based upon the convenience of the present campaign.

Mr. KRATTENMAKER. I think that is quite correct. Your reference is entirely accurate. And I think that we always have that fear. That is what the first amendment was designed to protect against. It is another subject, I think, Mr. Chairman, to talk about the extent to which the failure to apply usual first amendment rules to the broadcast media has made those media so much less effective as part of our national life, but I think that is the case, and it is not only the possibility or the actuality of biased censorship, but also the appearance.

I think it is also important, Mr. Chairman, to notice that it might not only be the public that would get that perception, it might be that speakers, operators of facilities, might have that fear or that perception, and it will induce them not to speak out or not to carry certain messages that they are offered on the fear that there will later be some partisan censorship.

The CHAIRMAN. Or, conversely, they are afraid to carry them because they have other applications before the FCC on a variety of other issues. They count the number of commissioners, and they count the political party, and they count who is in power.

Mr. KRATTENMAKER. Sure.

The CHAIRMAN. Out of fear, they go ahead and do something that they would not otherwise do.

Mr. KRATTENMAKER. Certainly. I would not be the first to observe, Mr. Chairman, that when there came a time when people in the White House were terribly angry with the Washington Post, that that anger was directed not at taking away the Washington Post's license to its printing press, but its license to its television station.

The CHAIRMAN. That is right. I had forgotten about that.

Let me turn your attention just for a second to the *Pacifica* case and the "Seven Dirty Words." There, the court in part talks about broadcasting's unique accessibility to children, and its uniquely pervasive presence. That is not so much a scarcity argument as an argument that radio and television are in quality different from newspapers. Therefore we have got to protect society—especially children—from this pervasiveness in radio that does not exist for newspapers.

Mr. KRATTENMAKER. Well, plug No. 2. I have another article coming out on that, and I will send you a copy. I had not intended to come up here and talk about my bibliography.

You are quite correct. *Pacifica* seems to me to be an even more disappointing decision than *Red Lion*, if you will. *Red Lion* rests on some specifically articulated premises that you can deal with, and that I think we are now in a position to refute. Indeed, I think one way to look at the testimony that was provided to this committee on Tuesday is, it provides a complete answer to the arguments that the majority sets forth in *Red Lion* for what it is doing.

In *Pacifica*, the court was confronted with a case where resort to the scarcity doctrine would not justify upholding the Federal Communications Commission. The radio station had aired some rather nonconventional material. You certainly cannot use the notion of scarcity as a justification for enforcing conformity. Therefore, the scarcity rationale was not going to get you anywhere in *Pacifica*.

To my chagrin, the court nevertheless was able to conclude that there are other grounds on which broadcasting is unique from other means of communication. To I suppose my even deeper chagrin, it simply stated those reasons. It asserted that broadcasting is uniquely accessible to children, and assumes a unique pervasiveness in our lives. It did not explain what is meant by accessibility and pervasiveness, nor what it meant by uniqueness. And those statements, as a matter of fact, seem so self-evidently erroneous that it leads me to wonder what if anything that is sensible the court could have had in mind when it uttered those phrases.

I give the example in the testimony I prepared for you today that I have a young son who rises very early. He was up again this morning before me, and before I woke up he had his radio on, and he had gotten the newspaper and pulled out the sports section. That is, both the radio and the Washington Post were accessible to my children, my unsupervised children, and both have a pervasiveness inside my household. And for the life of me, I cannot figure out what the Supreme Court might have meant.

What that means, I think, Mr. Chairman, is that the only way to look at *Pacifica* then is, in a sense, it is a trial balloon. I do not mean that the Court deliberately intended it as that, but the ques-

tion will be, what will it mean in the future? The Court is either going to have to cut back on what it said in *Pacific* to the point where *Pacific* is either overruled or is confined to nothing other than AM radio broadcasting, or we now have a doctrine that permits wide-ranging Government censorship of all forms of communication that are sent into the house without prior inspection by the recipient.

Here, that is, we have a doctrine that is ready to apply to the print media, to book clubs, to record clubs, without any finding that they use, enjoy, employ the electromagnetic spectrum, and that, I think, is the real threat of *Pacific* and why I find it to be such a disappointing opinion.

The CHAIRMAN. One of the things that has always surprised me about scarcity or the people who use the scarcity argument is the fact that there were only eight daily newspapers at the time our first amendment was adopted. Our Founders clearly grasped what scarcity was. That was scarcity.

Mr. KRATTENMAKER. It sure was, and not only were there only eight of them, but if I am not mistaken, they were all rather partisan. I do not think any of them followed a fairness doctrine or anything like that, Senator.

The CHAIRMAN. Oh, yes. I get a kick out of politicians today who claim that they are being maltreated by the printed press. The papers today do not hold a candle to the partisan papers, the party papers for all practical purposes, that existed in the early days of our country.

Mr. KRATTENMAKER. That is right, Mr. Chairman. I think they all had patrons, in fact, because it was necessary. The revenues were not sufficient to carry any one of them. One of the reasons they got the patronage was because of the specific party line they adhered to.

The CHAIRMAN. We had four papers in Pennsylvania, three in New York, one in South Carolina. We had some miscellaneous weeklies scattered about. But to the extent that the only known methods of communication at that time were speech and print, our Founders said, this is such a precious right that we are not going to allow the Federal Government in any way, shape, or form to regulate it. I cannot help but believe that had they been able to foresee broadcasting, they would have said the same thing about broadcasting. Marconi, unfortunately, was beyond their wildest imagination.

Mr. KRATTENMAKER. One hopes they would have, but I think you really expressed it correctly in any event. That is, we cannot really ask, what would they have done with broadcasting, but there certainly was an analogy there, and they behaved in the way in which they did. It therefore suggests to me that the purpose underlying the first amendment is not to enable or entitle Government to impose wide-ranging speech regulations on a medium simply because there are few members of the industry at the moment.

I think if somebody were to try to justify the difference to you, Senator, he or she would say, the difference is that anybody could have gone out and started up a newspaper, and I think that what I have been trying to suggest to you, and what I think the witnesses on Tuesday were trying to suggest to you is, it is also the case that anybody can start a television station. We do not, again, have that

perception, because we see licenses being handed out for free and not everybody getting one.

The fact of the matter is, you can go buy a license, and if you cannot buy a license, you can go buy the resources to make a TV station, and as you suggested, Mr. Chairman, you might be stopped by the FCC's spectrum allocation plan, just as, I suppose, someone might have been stopped in 1830 if the Government had put a limit on cutting down trees to make paper.

The CHAIRMAN. Well, we hear the argument that anybody can start a newspaper but everybody cannot start a radio or television station. That is comparing apples and oranges. They say, well, anybody can get a mimeograph. You can roll off four pages. A four-page mimeograph is not the New York Times. That is not the same equivalent. Anybody can get into the broadcasting business if they want to get a CB radio. That is your better analogy to the mimeograph.

Mr. KRATTENMAKER. That is funny. I thought I had a copyright on that example. You are the only other person I have heard use it. I think that is exactly right. Obviously, you have played this game before. It is a little bit like ping pong. Somebody says, I talk to them about the New York Times. I say, you can always go start a mimeograph. Is that not then like having a low-powered TV station? No, you can always go write a letter to your mother. Well, is that not like having a CB radio?

You are quite right that if you want to play that game, and there is really no point doing it unless you are at a cocktail party and have nothing else to do, because there is not much value in it. If you want to play that game, you do have to define the rules first and say, OK, what counts equally? And your point is exactly right. Anyone who is willing to equate a mimeograph machine with the ownership rights of a majority of stock in the New York Times Company ought to be willing to equate Channel 7 with a CB radio.

The CHAIRMAN. Before we are done with these hearings, I am going to have one or two witnesses come in and tell us the relative prices of starting a radio station versus starting a newspaper, and I mean a Washington Times or a U.S.A. Today, not a mimeograph. I have seen some preliminary figures, but the evidence, I think, will very clearly show that when you look at which medium is harder to get into, it is harder to start a newspaper, a serious newspaper, than it is to buy or build a radio station from scratch in any equivalent market, small town, medium town, big town. Building or purchasing a newspaper is infinitely more expensive than building or purchasing a radio station.

Mr. KRATTENMAKER. That is interesting. I do not doubt it, but I am not aware of those figures. I do not doubt what you say. One thing that would be a good idea to do would be to distinguish between, as I take it you are suggesting doing, distinguishing between the cost of building an operation up from the ground and the cost of buying one initially.

The CHAIRMAN. Well, I would do it both ways. I would say, let us assume that you wanted to start a television station in this town, and we will compare that price against the cost of starting the Washington Times and keeping it going to success. My hunch is,

the Washington Times is going to be infinitely more expensive to start and keep going if you are going to be a success.

Mr. KRATTENMAKER. That is my hunch, too. It would be interesting. You can, of course, get people who really know the answers to those questions.

The CHAIRMAN. Oh, yes. There are experts in that brokerage business.

Mr. KRATTENMAKER. A new TV station came on the market about 6 months ago, and we have had a new local newspaper come on just a few months ago. It would be easy to find out.

The CHAIRMAN. If I put the question, would it cost you more to buy the NBC affiliate in New York or more to buy the New York Times, my hunch would be that it would cost you more to buy the New York Times.

Mr. KRATTENMAKER. The figure would be so high for both that my eyes are spinning just thinking of the question.

The CHAIRMAN. Yes, I think you and I should probably stay in the businesses we are in. We are limited by the scarcity of money.

Professor, I have no more questions. I appreciate very much your cooperation on this. I cannot tell you how much it means to have you and the other two witnesses here who have spent a fair portion of your professional careers thinking about issues that I believe most people in this country are just starting to think about.

Mr. KRATTENMAKER. Thank you, Mr. Chairman. I must say it has been a great pleasure for me to be here, and I feel the same way. That is, for those of us who have worried about these kinds of issues and believe that they should not be solved by the application of labels or shiboleths, it is comforting indeed, a warm and wonderful thing to find people paying attention to the serious policy issues that are here, and not simply spending time wondering whether something is or is not broadcasting or is or is not technically subject to the fairness doctrine.

[The statement follows:]

STATEMENT OF THOMAS G. KRATTENMAKER, PROFESSOR OF LAW, GEORGETOWN
UNIVERSITY LAW CENTER

FREEDOM OF EXPRESSION AND THE ELECTRONIC MEDIA

Mr. Chairman, thank you for inviting me to appear before your committee today. I am deeply interested in the subject of this hearing, as I have been teaching and researching freedom of expression issues since entering law teaching in 1968. In this time I have paid particular attention to first amendment issues concerning the electronic media. I also worked directly on some of these issues when I served, from 1978-80, as a co-director of the FCC's Network Inquiry Special Staff.

As we are all aware, full consideration of the policy issues you asked me to address would require volumes of analysis. Time limitations necessarily force me to present my thoughts in telescoped form. Nevertheless, I hope that we might be able to understand how oddly defined are the present first amendment rights of broadcasters, how untenable are the assertions that some sensible principle explains broadcasters' distinctive (and subordinate) constitutional treatment, and how this combination of unusual rules resting on untenable principles could easily create massive confusion in the coming decades over the constitutional rights of anyone who employs electronic media to communicate. How this confusion might best be resolved in the public interest is a matter outside the scope of these brief remarks.

I. PRESENT STATUS OF BROADCASTERS' FIRST AMENDMENT RIGHTS

A. *Distinctive rules.*—Radio and television broadcast stations are subject to an enormous variety of rules concerning their programming that would be unquestion-

ably unconstitutional as applied to the print media under prevailing first amendment doctrine. I would characterize the repressive broadcast rules as falling into three types: content proscriptions, access requirements, and enforced silence. (1) Content proscriptions include prohibitions on "indecent" programs, de facto requirements that certain types of programs be aired to retain a broadcast license, restrictions on advertising products lawfully available for sale, and requirements that the licensee know and understand the implicit themes of materials it broadcasts. (2) Access rules include the requirement that free reply time be offered to a person whose character is attacked during a broadcast and that broadcast time be guaranteed to be available, at a fee, to all candidates for elective federal office. (3) Rules exacting enforced silence include those prohibiting television network affiliates from broadcasting, during the four hours of prime time each night, more than three hours of adult entertainment programming (the prime time access rule) and prohibiting all broadcasters from covering only one side of a controversial issue of public importance (the fairness doctrine).

Some might quarrel with the foregoing categories. But no one could dispute that such statutory rules and administrative regulations exist and have been consistently upheld by Federal courts, yet would not stand a ghost of a chance of surviving a constitutional attack if subjected to the dominant first amendment doctrines presently applied to the print media.

B. For assertedly distinctive media.—The reason we have been given for this dichotomy is that broadcasters are distinct from all other communicators in some constitutionally relevant manner. Three differences have been suggested by the Supreme Court. (1) Scarcity: Broadcasters, we are told, use a scarce resource—the electromagnetic spectrum. "Where there are substantially more individuals who want to broadcast than there are frequencies to allocate, it is idle to posit an unabridgeable first amendment right to broadcast comparable to the right of every individual to speak, write, or publish." *Red Lion Broadcasting Co. v. FCC*, 395 U.S. 367 (1969). (2) Pervasiveness: According to the Court, "the broadcast media have established a uniquely pervasive presence in the lives of all Americans." *F.C.C. v. Pacific Foundation*, 98 S.Ct. 3026, 3040 (1981). These media are pervasive in the sense that they confront us in the privacy of the home and without effective prior warnings as to what is being communicated. (3) Accessibility: Further, "broadcasting is uniquely accessible to children." *Id.*

II. EVALUATION AND IMPLICATIONS

Unfortunately, each of these deceptively elegant rationales is, to be frank, nonsense. The electromagnetic spectrum is, indeed, a scarce resource. But so are paper, ink, printing presses, and audio tapes and discs. Indeed, the notion of a "non-scarce resource" is a contradiction in terms. In any constitutionally relevant sense, spectrum space is no more scarce than printing presses. Anyone who wants to use either is free to pay the present market price and do so. Because each commands a price, neither is available to everyone who wants it. And, if scarcity refers to quantity, the number of broadcast stations in the U.S. far exceeds the number of newspapers. A radio station is no more pervasive or accessible, as the Supreme Court used those terms, than a home-delivered newspaper. Indeed, this morning I read a newspaper and listened to the radio before coming here. Both activities occurred in my home, in neither case did I know in advance what I would read, see, or hear, and my early-rising son beat me to the sports section and had his radio on before I awoke.

Simply and briefly put, we now see that the emperor has no clothes. Facile assumptions about the distinctiveness of the broadcast media have turned out to be just that: facile assumptions, used after the fact to rationalize uncritical judgments about the social, intellectual, and political importance of the electronic media made when those media were in their infancy and seemed no more than amusing gadgets.

But if radio was the Pac Man of 1927, electronic communication is today's printing press of the 19th century. Communication by means of electromagnetic signals is now the dominant mode of transmitting information, ideas and entertainment and, because of inherent cost advantages, will continue to be so for the foreseeable future.

Further, that means of communication is no longer the exclusive province of broadcasters and AT&T. Business data is transmitted by satellites from computer to computer. Newspaper layouts are beamed around the country by satellite and can be sent directly to the home via airwaves. Home entertainment programming is now received via cable, microwaves, and satellite.

As the distinction between broadcasting and all other forms of communication disappears and as the lion's share of all communication is transmitted, at one or more

points, electronically, the uncritical assumption that the first amendment rights of broadcasters must differ from those of other speakers will be impossible to indulge. When we then turn to see why broadcasting has been said to be different we will see that those reasons apply with equal force to a wide variety of media, print and electronic alike.

At that point, unless something is done to explode the myths of scarcity, pervasiveness, and accessibility, we will be at the mercy of government bureaucrats. FCC Commissioners, Justice Department lawyers, and state legislators will be perfectly free to erase the inexplicable differences in treatment of speakers either by discarding and unusual regulation of broadcasters or by imposing those regulations on anyone utilizing the spectrum as part of a method of communicate to persons in the privacy of their homes and offices.

The latter course is the more "logical," in that it simply applies the scarcity, pervasiveness, and accessibility "rationales" to those media they fit. By this simple process, one can easily explain, for example, rules requiring newspapers to carry no more than three-fourths of their stories from one news service (compare the prime time access rule), cigarette manufacturers to stop sending business data via satellite (compare the ban on radio and TV cigarette commercials), videotext operators to report fully and fairly all sides of every story (compare the fairness doctrine) and magazines not to transmit "indecent" pictures via microwave.

Surely, our constitutional freedoms will be better protected by action that forces government officials to take the former tack: to rid broadcast regulation of its untenable second-class constitutional status. We could then ask the proper questions of proposed regulations: do they achieve purposes consistent with first amendment values, by the least intrusive available means which are applied even-handedly to all media that create the evil sought to be cured? If we adopt this approach, the only risk I can see is that we shall suffer too much freedom. I hope this Committee can devise a practical way to inflict that risk upon us.

Mr. Chairman, I thank you for the opportunity to express these views and regret only that I have been unable to explain in detail the reasons that led me to them. I would welcome the opportunity to respond to any questions that occur to you or your colleagues.

The CHAIRMAN. I will assure your students that in your classes there is never any fog.

Thank you for coming. I appreciate it.

As I indicated a little earlier, Professor Pool arrived just as we were starting with Professor Krattenmaker. If Professor Pool is ready to testify now, I would prefer to go right on, and we will see if Professor Alstyne has arrived by the time he finishes.

Professor Pool, I appreciate you sending me the advance on your publication. I have finished about two-thirds of it, and I find it very, very informative.

STATEMENT OF ITHIEL DE SOLA POOL, PROFESSOR, MASSACHUSETTS INSTITUTE OF TECHNOLOGY

Mr. POOL. I am impressed that anybody has read even one-third of it.

The CHAIRMAN. Professor, why don't you go right ahead? As I told Professor Krattenmaker, you may proceed as you choose and we will put the entire statement in the record.

Mr. POOL. Mr. Chairman, first of all I would like to congratulate you on raising the issue of the first amendment as it has been applied to the media that have been invented in this 20th century, because it has been applied only in very atrophied form for them. I see no justification for denying to the electronic media the full freedoms that the first amendment guarantees.

From the beginning the heart of the meaning of the first amendment, though not its full scope, was a flat prohibition on prior licensing, a prohibition on prior restraint of what was published in

any form. Yet today, if we look at the electronic media, whether they are carriers or broadcasters, the Government licenses them if it feels that it is in the public interest, convenience, and necessity. I do not see how anything could be further from the spirit of the Constitution.

Up to now, one could argue that this really was not terribly important, even if it was a deviation, because side by side with these regulated media there were print media that were completely unregulated, completely free in what they said and published, so that no amount of pressure by the Government on broadcasting stations or on carriers would silence the criticisms of the press.

That situation, however, Mr. Chairman, as you have stated, is changing. All media are becoming, at least in part, electronic. Newspapers that used to publish their information only in the form of pressing ink on pieces of paper are now making the same information available in a variety of new ways, and will increasingly do so. They are making their information available via computer retrieval systems. They are distributing the material nationally via satellite facsimile to printing plants. They will increasingly make information available in many different ways, because their important job is the assembly and editing of that information, and their customers will have many different kinds of facilities, a lot of them electronic, with which to receive that material.

If we look at the way the new media, the media invented in this century, have been subjected to controls, and indeed if we look at some cases in the 19th century, it has almost always been because there were some elements of monopoly in the media situation.

That was certainly the argument in 1927 when radio licensing was established. There was a feeling that the number of frequencies that could be made available was very limited. Specifically, it was thought that there was no way in the visible future in which more than the 89 channels that were then available for the whole country could be made available. And under those circumstances, it was felt that the most highly regarded applicants should be chosen and they should act as public trustees, rather than with the full freedom of publishers.

Now, for reasons that a number of people in these hearings have already stated, I believe that that notion about the shortage of spectrum was wrong in 1927. I am willing to concede that that may be today an academic argument and perhaps reasonable men would disagree.

I would like to reaffirm the idea that has already been presented to you that every medium is in some sense scarce. You have used the example of paper, and it certainly is a very appropriate example. In the 19th century, until the 1860's, paper was made from rags, not from wood pulp. And then there came a severe rag shortage because the British removed their taxes from publications, and so the demand for paper in England went up very rapidly and the result was a great world shortage of paper. Well, the response to the rise in the price of paper was that new methods of making paper were developed. The market called for it, and technology responded. Paper started to be made out of wood pulp.

Now, on exact analogy to that, if in 1927 radio spectrum had been treated as a commodity, it would initially have been sold at a

market price that would have been obviously higher than the free zero price at which it was given away, but at a price that might have seemed at the time high. But the very effect of that fact, as in any market, would have been to encourage various multiplexing techniques which were described to you on Tuesday, those would have come much more rapidly and the scarcity of frequencies would have been overcome much more rapidly.

In short, the scarcity of frequencies is not a fact of nature, but it is a consequence of a licensing system. It is the cause, not the consequence of the shortage of radio spectrum.

Now, even if I am wrong in that argument about 1927, there can be no doubt that at the present time the argument about spectrum scarcity has lost its validity. It is no longer a justification for regulation of broadcasting. I will not repeat the discussion that has been presented so ably in Tuesday's testimony about the various ways in which the number of channels can be increased enormously.

The CHAIRMAN. I might say, Professor, it was your statement that we could take one UHF TV channel and turn it into hundreds of radio stations in every city that caused me to ask each witness that question. And indeed, they verified what you said. By any rational person's definition, there is no scarcity. A market may not support 5,000 radio stations, it may not support 200. But we could have 200 today if we want 200. And it was your statement that tipped me off on that.

Mr. POOL. Well, I am delighted that Mr. Buchsbaum and the various other witnesses agreed, because it seems to me it is clearly the case. And maybe someday there will be hundreds of stations. The economics of it certainly means that there will not be a thousand radio stations in every city supported as they now are totally by advertising. The economics will not support that. But there are other ways of supporting radio stations.

The CHAIRMAN. I have posed that question to some other people. I did not pose it to the witnesses on Tuesday, because they were here principally for technical purposes.

But some of the broadcasters I have talked with privately say, yes, they could make it on an audience of 5,000 or 6,000 people who would be very interested in a particular topic and who would be willing to support it by subscription. The broadcasters said they might even be able to do it if they could narrowly define their audience on a commercial basis to advertisers who wanted to reach that very narrow kind of market.

They do not need to have 200,000 listeners to make a profit. They can do it on a narrow base if they can identify that base and get to it. And indeed, with several hundred radio stations, you could get to that very narrow base.

Mr. POOL. Yes. And besides that, of course, audio channels on cable can also be pay channels by which small groups of subscribers, can get what they want.

It verges over almost indistinguishably to teleconferencing. Teleconferencing is maybe five people sharing a channel. Well, if there are 50, if there are 100, if there are 500, at what point is it radio and broadcasting, at what point is it teleconferencing?

The CHAIRMAN. Well, of course, as Professor Krattenmaker and I pointed out, it is a very interesting distinction between what is broadcasting and what is not broadcasting when the properties of both are identical. They both use a wire, they both use the spectrum, they both are capable of handling the same kind of message. Why is one subject to Government control and the other not, although the one is not merely at Government sufferance?

It is not that we cannot regulate the common carriers and say they are subject to all the other provisions of broadcasting. We do not. But to try to intellectually distinguish a telephone wire from a cable and say that somehow one has different properties from the other is very hard to do.

Mr. POOL. Yes. And it is becoming increasingly difficult to do as the telephone wire begins to carry broadband signals. As the new technology does that, it is going to be completely artificial to maintain the present rules which prohibit cablecasting by the phone companies.

In a free market system of broadcasting where there were monopoly conditions, as there are for example, for a universal carrier, the only reasonable requirement would be an access requirement that it act as a carrier. And there will remain some areas of at least partial monopoly.

That is not new. The postal system was exactly that. The print media in the United States could not have developed without a postal system. And therefore, the requirement on the postal system was very strict and very severe, that it carry whatever legal material anyone brought to it.

And then, of course, came the telegraph carriers and the telephone carriers. And, to some degree, that may be the situation for cable carriers because there is only going to be one cable network in most cities. But it does not follow that carriers lose their first amendment rights either. They should also, as anyone under the Constitution, have the right to publish as they wish without seeking permission.

The obligation of a monopoly carrier is to serve all comers equally, and it does not thereby surrender its own constitutional rights. And therefore, I have some reservations about some regulatory efforts that are now being made—that are represented, for example, in Judge Green's modifications of the consent decree—that attempt to control publishing by carriers.

The argument is made that the restriction is only if they use their own lines. I think this misses a very important fact about what the technology of electronic publishing is. The technology of electronic publishing is not something peculiar to the lines. It simply means you put information on a computer. People can access that computer in any one of a hundred ways. And there may be no way to know how anyone has accessed that information.

So the attempt to tell a carrier whether it is a cable system, a telephone company, whatever it may be, that it may not publish certain material, simply says they are not allowed to put information there where it can be accessed by somebody far away dialing an appropriate number and not knowing what lines it goes over.

The CHAIRMAN. Let me make sure I understand what you are saying. You have a computer, and you have access to that comput-

er. I do as a homeowner or business person either through the cable or through my telephone wire. And indeed, the computer does not know how it is being reached.

Mr. POOL. That is right.

The CHAIRMAN. In that instance it is doubly difficult to defend. Even with a cable, I will probably make the initial contact with something connected to my telephone, and there is no way that you can say the cable wire will be subject to equal time and fairness and the telephone wire will not, when indeed you do not even know which wire the message is going through.

Mr. POOL. Exactly. And the routings are done automatically by computers which are switches for load leveling, so that today when you dial a number, suppose to Chicago, you have no idea where that call is going, whether it is going to go by satellite, by ground lines, by microwave, via Los Angeles if the lines from here to Chicago are busy. There is just no way of knowing where that call is going.

It is, in my opinion, not only unconstitutional to try to bar carriers, whether they be cable systems or other carriers, from programming, but in the case of cable companies, it would clearly destroy the prospects for the development of cable in this country if they were not allowed to earn some of the profits that are available from doing exciting and interesting programming.

So I would argue that these regulations fail on both free speech and on economic grounds. However, that does not say that it is inappropriate to insist that where there is a monopoly situation, that other publishers besides the carrier also have access for publishing.

In particular, I would say that it is essential that newspapers, magazines, and book publishers, and others in the information industries in this country have the right to lease channels on cable as they have the right to lease channels on other carriers. A publisher of important information could find himself later in this century having to negotiate in every city whether he can deliver his material. And that is a situation that we do not want to see occur.

So, Senator Packwood, let me conclude by congratulating you again on your proposal that we need to reaffirm that the electronic means of communication enjoy the same first amendment rights as do the print media. I agree with that. The maximum stretch of regulation is that which is applied in a situation of monopoly of allowing access, which was applied in the history of the post office.

And I would suggest that the goal that you have in mind might most easily be reached, by a joint resolution of the Congress that would reaffirm the belief of the Congress that the first amendment does apply to the electronic media, as I believe it does apply.

There have been some wrong decisions in the courts. There are also some decisions that could have been argued in the past, like *Red Lion*, but that are now clearly obsolete. I do not think that it is desirable or necessary to assume, therefore, that the first amendment does not apply. It may not have been applied, but I believe it does apply.

So I believe that the Congress should state that the first amendment extends beyond the print media to all means of speech. The first amendment does not single out only certain means of speech.

That would be what I would urge you to take as a first step.

The CHAIRMAN. Professor, I appreciate that suggestion. I have very deliberately refrained from drafting technically what ought to be the first step. That is part of the purposes of these hearings. People have said, well, you have suggested a constitutional amendment; do you have it drafted?

No, for two reasons. One, until the public, the Congress, and especially the parties that are directly affected, are willing to help pursue this amendment, it will not go anyplace. I understand that. You have to have a climate of public opinion first. And if the broadcasters think they have reached Shangri-La, if they can just get rid of fairness and equal time, there is no point in trying to pursue it beyond that stage. There is not a wellspring of overwhelming demand from the public that this go on.

And the other reason is, I agree with you, that the Court has made a mistake in its interpretations. They have been incremental mistakes. They started out with a small decision and then a slightly bigger decision, until now they have gone whole-hog. Now the only way I think that they could change is if they literally changed. If they say, "our past decisions are wrong."

And I think they could do that if they wanted to without really having to reverse themselves. They could say well, the old decisions depended upon scarcity and scarcity is no longer valid, and therefore the old decisions are no longer binding. They could start down a new trail.

And it would be much easier for all of us if they would do that. If I were a lawyer for one of the networks taking a case to court, or for a newspaper that was adversely affected by some kind of cable regulation, that is the factual foundation I would lay: scarcity is no longer valid. And I would spend a great deal of time and money on that subject, and call many witnesses.

Let us assume the court does not change, that we have another case or two and indeed they come out roughly the same as they have come out before—are you suggesting that a joint resolution is adequate? Or are you suggesting that just as a first step?

Mr. POOL. I am not suggesting that it is necessarily adequate. It may turn out not to be if the courts go further down the slippery slope that they have started on. If they paid no attention to the stated intent of Congress, when that intent had been clearly stated, then I think that further measures, such as a constitutional amendment, might be necessary.

But what worries me initially would be getting into a situation where one conceded that the Constitution as now written does not apply to the electronic media. I think it does apply, it always has applied, and we should reaffirm that it does apply.

The CHAIRMAN. That troubles me, too, because as soon as you draft the amendment, the court can say, well, they presume that the first amendment does not apply or they would not be drafting another amendment. I have no intention of altering the first amendment in any way. I think that is too precious a document.

If I were to go the amendment route, I would make it an additional amendment rather than in any way tampering with the first amendment. But I know the danger of a court decision—and we have all read them—where the court has said well, Congress could have acted and chose not to when it had this issue before it—and

then they reach whatever conclusion they want from either our action or inaction.

I am never sure in most of those cases that those are justifiable hooks for the court's decision, but they will cite them as a factor.

Mr. POOL. Yes. Well, I think this has to be a process, and I am delighted that you have started the process.

The CHAIRMAN. Let me ask you a last question, Professor. I find in dealing with some newspaper people, more so than with broadcasters, that they cannot yet grasp the fact that much information may be delivered to the home electronically. My hunch is that you and I and most of the people in this room get the morning paper and read it the first thing in the morning—we are newspaper junkies. And indeed, just like there will always be a narrow band of listeners who want a certain subject, most of us are going to want a newspaper delivered that we can comb through and mark up and cut up and show to our spouse and say, see here, I told you so, it is right here in the paper.

Is it not almost inevitable that a fair portion of what we today call "news" in newspapers is going to be delivered to homes electronically? We may both subscribe to a newspaper and get up in the morning and say, well, gee, the paper went to bed at 12 o'clock last night. But now I would like to see what happened in Beirut since then. And you will punch in "Beirut," and out will come the Washington Post 6 a.m. update of what is going on.

Mr. POOL. Yes, Mr. Chairman. This debate is often put on the wrong foot by arguing whether paper is going to disappear. Paper is not going to disappear. It is an extremely convenient means of putting information out. I cannot think of a more convenient one. You can fold it up and put it in your pocket.

The question is how the paper will get there. If this material comes over a wire or comes over the airwaves into some kind of terminal and gets printed out, in fact, the use of paper may grow. One of the things that people discover when they put in word processors is that they were wrong when they thought they were going to save paper. The amount of paper use increases because it is so easy to reprint something. You find a little mistake and you run it all over again.

Well, in exactly the same way, when the paper material comes out of some simple electronic device, and the storage is cheap in an electronic form, you are not going to keep a filing cabinet, you are just going to print it out each time you need it. And when you are done with it, you throw it away, because you can print it another time.

So the issue is not whether paper is going to disappear, nor whether the newspaper is going to disappear. It is not going to disappear. I do not think anybody is going to enjoy reading editorials in the Washington Post—assuming they enjoy reading the editorials in the Washington Post—off of a screen. Some people may, and for those people who like to do that, it will be available that way. But most people would rather sit in a comfortable chair with a piece of paper.

But that does not mean that the information has not been distributed partly electronically, maybe directly to the home electronically, maybe to a subdistribution point.

Maybe the paper will consist, not of one large 100-page document, but some parts of it available on your screen, like the want ads, where you do not want to read through the whole thing. For them it is much easier to be able to say, I want to know about apartments that rent for—let us make up a fantasy—less than \$400 a month right near where I work, and just have those few appear. And on the other hand, you would get human interest stories in an entirely different way.

So the publishing business is the business of bringing all of this information together, getting it into usable form, making it manageable. The delivery system is going to be a mixture; it is going to be a mixture which will involve some printed material on paper, some actually delivered, but a lot of it printed at a terminal, and some read off of a screen.

The CHAIRMAN. I know what you mean about the want ads. I am looking for a particular kind of sailboat that is not too common, and I am fully aware that sailboats are item 35 in the classified ads here. My hunch would be that this kind of boat—it is not a big boat, not particularly expensive—only comes on the market every now and then. I would like to be able to receive on my television set at a moment's notice the sales of those boats up and down the Atlantic coast and what the sale price is going for. That is the kind of service I would use very frequently.

Mr. POOL. Yes. And you would pay for it.

The CHAIRMAN. Oh, yes, I understand that. But again, as we have well proven, when the service is provided, there are enough people who will pay for it and it will be provided.

The argument was made, if you have those 200 new radio stations, our present radio receivers will not receive them. That is true. My hunch would be that if indeed we had several hundred new radio stations, it would be a great stimulus to employment in this country because the makers of radios would turn out brand-new radios that would pick up 200 radio stations, and most of us would buy them.

It is almost a backward argument; 200 stations cannot be received; therefore, they will not broadcast; therefore, there is scarcity; and therefore, we regulate.

Mr. POOL. Yes.

[The statement follows:]

STATEMENT OF ITHIEL DE SOLA POOL¹

There is no justification for denying to electronic media the full freedoms that the First Amendment guarantees. Senator Packwood is to be congratulated in raising the issue that the First Amendment has been applied to the media invented in the Twentieth Century only in very atrophied form.

From the start, the First Amendment guaranteed that anyone could print or publish at will without prior licensing, prior censorship, or any form of prior restraint. Yet today no one is allowed to broadcast or to set up an electronic carrier of information without a license, which is granted only if the government believes the "the public interest, convenience or necessity" will be served. Nothing could be more contrary to the spirit of the Constitution.

As electronic media have become increasingly important in this nation's communication system, that deviation has become more disturbing, but up to now we could

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at least feel that no matter how much government control there might be over electronic media, the basic freedom of the country was assured by the continued absence of any regulation of print media. No amount of government pressure on broadcasting stations or networks could silence criticism in the press.

That situation, however, is changing in ways that I try to describe in a forthcoming book. All media are becoming at least partly electronic. Newspapers that once appeared only in hard copy print are increasingly making their information available via computer retrieval systems too. The print versions are being distributed to printing plants via satellite facsimile. Information industries realize that they must make their product available in many different ways, and of these ways an increasing portion are regulated. Thus contrary to the national tradition in which the media were to be completely free of government oversight, they are now increasingly under state pressure.

This situation came about because some of the new media seemed to the Congress and the courts to have elements of monopoly in them, which would prevent diverse publishing by all who wished, unless the government did something to assure diversity.

For broadcasting the system of licensing and regulation was established because the Congress in 1927 and 1934 believed that there was a severe limit to the number of frequencies that could be made available. Specifically, in 1927 when the Radio Act was passed it was thought that there was no practical way to have more than the 89 channels then available to the nation. Under that circumstance the reasonable thing to do seemed to allot licenses to the most highly regarded applicants and make them public trustees, obligated to operate a fair forum for different views.

There is reason to believe that the belief in the inherent shortage of spectrum was wrong in 1927, though reasonable men could differ on this; it is certainly wrong now. The fact of the matter is that every medium uses some resources that are limited. At various times in American history paper has become somewhat scarce and when that happens its price goes up. One consequence is that the people then invent new ways to provide it. In the United States in the 1860's when the price of rag paper shot up a way was found to make paper out of wood pulp. So in 1927, if radio spectrum had been treated as a commodity to be sold by the government at a market price, it would initially have been expensive, but various multiplexing techniques would have been developed that engineers now understand well, to allow more parsimonious use of the airwaves and therefore more channels. In short, the scarcity of frequencies was not a fact of nature, but a result of the fact that the system of free grants of spectrum to politically chosen licensees gave no incentive to use the airwaves better. The system of licensing chosen was really the cause, not the consequence of the shortage of radio spectrum.

But even if I am wrong in that argument, there can be no doubt that by now the spectrum scarcity argument has lost its validity as a justification for regulations of broadcasting. An unlimited number of channels can be had for broadcasting on cable systems. Current cable systems are being built with twin cables and over 100 channels. If more are needed, there could be any number more. Over the air broadcasting is more limited. Still radio broadcasts could be vastly multiplied; by taking one UHF TV channel there could be hundreds of radio stations in every city. Also radio spacing could be narrowed from 10 to 9 kilohertz. Even TV could have many more channels, partly by direct satellite broadcasting, but even more by use of low power local TV transmitters.

In short, in a free market system of broadcasting, in which those who wished to broadcast could both purchase frequencies for transmission over-the-air and time on cable systems, broadcasting could be as free of regulation and prior licensing as print publishing always has been. In such a system the fairness of doctrine and equal time requirement are obsolete.

There will remain areas of partial monopoly in future communications; most specifically carriers that provide universal connection to everyone in the population tend to be that way. The first carrier monopoly was the postal system on which our free press depended. As a result our laws required the Postal Service to carry all legal material without discrimination. In short it was set up as a common carrier. The next common carriers were the telegraph and telephone systems. Insofar as these services, and soon cable systems too, are relied on to be able to reach anyone in the national population and are the only way to do so, it seemed reasonable to expect them to make their service available to all.

It does not follow that these carriers lose their First Amendment rights. They, as everyone else in this nation, should have the right to publish what they wish, as they wish, without seeking permission. The obligation of a monopoly carrier to serve all equally is not grounds for surrendering its Constitutional rights. On those

grounds, I question some items in the recent AT&T consent decree and in some proposals for separating carrier from content in cable systems.

Judge Greene in the modified Consent Decree and several bills that have been considered in Congress have attempted to control publishing by phone companies. But under the First Amendment anyone, including phone companies, has a right to publish. The argument that they are only restricted from publishing if they use their own lines is an argument which is technologically erroneous. The way electronic publishing is done is that the publisher puts information on a computer, and allows it to be accessed. No one can tell what lines were used by a customer who phones up that computer from a distant location. The proper restriction on any carrier is not to forbid them from publishing, but to insist on their carrying out their common carrier duty to serve all who wish to put out information over their lines equally, at the same rates and without discrimination.

Cable systems in cities are in substantially the same situation. They too are partial monopolies. There will only be one cable system in any city. While there are alternative ways of getting information out, for many purposes the alternatives are far less efficient than cable systems. It is as if a 19th Century railroader had objected to being a common carrier on the grounds that anyone whom he did not choose to serve could hire a horse and wagon.

But it does not follow that, as some people have suggested, cable systems should be barred from programming. In the first place it would in my opinion be unconstitutional. Cable companies have the same right to publish as anyone else. Furthermore, denying cable systems the right to earn profits from programming would destroy the prospects of cable development. So proposals that have been made to limit what cable systems can offer to the public, fail on both free speech and on economic grounds.

However, the claims of some cable spokesmen that they be allowed to control everything that goes on their systems, and be able to restrict people from leasing channels for competing material is equally wrong. The system owners do have a large measure of monopoly control over one of the most important media of the future, and they have it by government franchise. It is proper that other publishers should also have access to cable channels.

In particular it is essential that newspaper, magazine and book publishers and others in information industries have the right to lease cable channels. A publisher of important information could find himself in the later years of this century in a situation in which in some cities he could distribute his product over the major distribution system in the city and in other cities he was locked out. We must not let that happen.

Senator Packwood has proposed that we need to reaffirm that electronic means of communication enjoy the same First Amendment rights as do the print media. I agree. Where they are not monopolies there should be no regulation at all, and where there is a significant natural monopoly element the maximum stretch of regulation should be to assure that all have access to the monopoly resources so that they can publish.

The first steps towards Senator Packwood's goal of reaffirming the application of the First Amendment to the electronic media could be by joint resolution of the Congress. I believe the Courts would listen to that affirmation of Congressional intent. The First Amendment by its plain language applies to all forms of expression. Let us reaffirm that before embarking on more complex routes of policy making.

I apologize if I have made too long a statement, but the issue of free press for the electronic media is a vital one. Thank you for your attention.

The CHAIRMAN. Professor, I have no more questions. Let me have a chance at least to shake hands and chat with you for a moment when we finish here.

Why do we not take about a 15-minute break? Professor Van Alstyne has just arrived. We will give him a chance to get his coat off and get his notes together. We will take up again at 11 o'clock.

[Brief recess.]

The CHAIRMAN. The hearing will again come to order.

Professor, you did not have a chance to hear the two previous witnesses, and I do not know if you have had a chance to review the testimony we heard on Tuesday.

Mr. VAN ALSTYNE. Yes, I have that.

The CHAIRMAN. The Tuesday testimony, of course, was technical. What those people said, in essence, in that scarcity is gone, that under any rational circumstances, to any reasonable mind, we can have as many radio and television stations as we want in Washington, D.C., or Los Angeles, or New York. Whatever limiting factors there may be are economic, not technical. I think we can almost take that as given, based upon the testimony of those scientists on Tuesday and the two previous witnesses, Professor Pool and Professor Krattenmaker. They both said yes. There are other things to talk about, and there are additional issues. Are these resources scarce any longer, if they ever were? They said, without going back and addressing if they ever were, that they are not today.

So, with those comments, I will introduce Prof. William Van Alstyne, from Duke University, who is one of the two or three best known academics in the United States on the subject of the first amendment, who has written extensively on it, and who very graciously flew up here this morning, barely getting out of Durham in the fog. Professor, I appreciate you coming up here very much. I have the part of your statement that you have submitted previously, and it is like reading a very good serial novel. I did not have time to finish it all. It just ends in the middle of a page. You may proceed as you wish with your oral testimony.

STATEMENT OF WILLIAM VAN ALSTYNE, PROFESSOR, DUKE UNIVERSITY LAW SCHOOL

Mr. VAN ALSTYNE. This is awkward, not having been present during the appearance of the preceding witnesses, and doubly awkward because, as you have already quite rightly acknowledged, I have tried to comply with the committee's quite appropriate request to submit a bit of testimony in advance, but the subject that you are addressing, Senator, is so interesting and so important and so complicated, and I share with you the thought that this should at best be an opening consideration of a subject which should interest the Congress for some time, that in an effort to produce for you a comprehensive prepared statement, though it ran nearly 20 pages by the time I had to release it to the Xerox machine, it was then even less than half done.

I worked on it a bit more yesterday, but it is preposterous to impose upon you by presuming to read all of those pages, and yet, having missed the appearance of the preceding witnesses, I scarcely know how to avoid the risk of being a little bit redundant.

What I should like to do, then, are two things. First is to assure you again, as I have privately, that I shall deliver the balance of that prepared statement for such merit and value it may have for the future use of the committee, and momentarily then to confine myself to not more than 10 or 15 minutes of rather loose extemporaneous remarks which are meant to at least reach what I privately regard as the central issues in reconsidering the legislative wisdom of continuing to vest in the Federal Communications Commission the very extensive degree of program content regulatory power that it currently possesses, and which indeed it ultimately enforces by threat of removing licensing from broadcasters.

It is interesting, by way of just very brief historical comparison, that when the Federal Communications Commission first got into this business back in 1934, unknown to itself, the very kinds of uncertainties entertained by Congress that resulted in the enactment of the Federal Communications Act were really not dramatically different, strangely enough, than equivalent kinds of considerations which first explained a very complicated and oppressive licensing system in England that lasted roughly between 1557 and 1694, a century and a half.

I want to indulge that comparison, because it goes to an issue which is on the fringe (not "scarcity") of many arguments that are made about radio and television. It is commonly supposed to make a very great difference, and it is not so much scarcity as impact. It is, rather, that the nature of the medium, its graphics, its influence (as McLuhan called it, the "cool medium") are allegedly unique. There is something remarkably more impressive and different and powerful than that distinction, all others aside, warrants a very special, if not unique, superintendence: even a licensing power under this Government.

The curious feature of that suggestion is that historically it also was employed in partial explanation for licensing the press in England as well. It is not well remembered now, but the first presses in England that had movable type face were regarded with an astonishing uneasiness. Those who could afford such a press had within their capacity the cheap production of multiple copies that could reach a mass audience in such a large expanse of space and so quickly, from the process of authorship to circulation, as to be feared.

There was very great anxiety in England about the possible abuses of that press. The graphics of the print medium in the 16th century conveyed to lots of people the same august authority that television communicates to people today. To see it "in print" was to impute to it greater credibility. To recognize that not all could financially afford print presses was to stir an anxiety then that those who could afford to do so might unreasonably dominate the communications world.

I assure you, Senator, that those were among the very reasons that the Government of England gave in forming what was then a government monopoly conferred upon a private group, the Stationers of London, who in exchange for licensing agreed to regulate their own content. Indeed, among the foremost regulations which made all of this history so very famous in the history of our first amendment and its free press clause, was an assurance that the licensing agency, the Stationers' monopoly, would take care to license no printer who might print items of a seditiously libelous nature, that is to say, remarks disparaging of the Crown which would control the licensing mechanism.

I am not going to sketch that further. It ended in 1694. In fact, it is a powerful part of the legacy of our own first amendment (which forbids such licensing) that there has never been a Federal licensing provision respecting the print press. Albeit it is quite clear that modern high speed print presses, in particular local communities, have at least an equivalently dominant position on the source of local news as any radio or television station, and quite plain to my

satisfaction that certain single town newspapers have a very dominant influence on the selection of local candidates who do not draw national media attention.

The CHAIRMAN. Certainly more so than the half a dozen radio stations that may exist in the same town with only one, usually morning, usually dominant local newspaper.

Mr. VAN ALSTYNE. There is no question, and I want in a moment to render more dramatic the incongruity of the comparison we are beginning to develop. At any rate, as a historical matter, therefore, it was precisely because of dissatisfaction with the licensing mechanisms that the first amendment was in part adopted. If there is anything that is secure about the free press clause, it is that it forbids licensing systems as applied to the conventional press, despite the sense of danger that may lurk in the concentrated power in particular newspapers in particular locations.

All that is forgotten by the 1920's, forgotten in the distant sense that Congress then experiences the same sort of uneasiness that they are dealing with an unfamiliar medium. Here, in the 1920's television has not yet appeared, but radio has fully arrived although it is still rather experimental, largely on the AM wavelengths.

But that is part of the reason this mechanism was laid into place: an uncertainty about its power, an uncertainty about its distribution, and an uncertainty as to the degree of competition that can be assured through private ownership of a sufficiently diverse kind that there would at least be no undue concentration and complete domination of communication.

Now, as you yourself already expressed, and as has already been made quite clear from the testimony received not 48 hours ago, the universe even of radio and television communication is cosmically different from what it was in fact in the late 1920's and indeed what it could most clairvoyantly have been anticipated to become.

The case which sustained the power of the FCC as a matter of fact, if anything, is something of a practical caricature of anxieties about domination by the radio industry. The particular case, *Red Lion*, involved a small 1,000-watt AM radio station whose prime time commercial rate for peak listening hours was \$25.

The CHAIRMAN. Is that right? At the time of the *Red Lion* case, their peak rate was \$25 an hour?

Mr. VAN ALSTYNE. That is correct. If you wanted to broadcast—there is something misleading—

The CHAIRMAN. As I recall that broadcast, the Billy James Hargis broadcast was 15, 20 minutes, a half an hour. The whole thing has been precipitated out of a \$12.50 rental of a half an hour of time?

Mr. VAN ALSTYNE. Actually it is more miniscule. The reply opportunity would have cost the disparaged person \$5.

The CHAIRMAN. For which he would not pay and demanded that he be given the time.

Mr. VAN ALSTYNE. And was given free time in correspondence with the FCC's demands. It is one of the free rider problems created by the doctrines innovated by the Commission pursuant to its statutory authority to regulate its licensees according to its best view of the public interest. That is quite right. But Mr. Cook was

offered reply time over *Red Lion*, and I think the charge was not more than \$5, as a matter of fact, which he readily conceded (as not an impoverished and quite well known journalistic figure) that he could afford, but the FCC said that was not necessary.

So then the cost, you see, of presenting the original program to the station any time the program is likely to be controversial involves a shadow cost, as I hope you will well appreciate. That is, it is not only the production cost of the media show, whatever it may be, and therefore the necessity to find suitable sponsorship, or if the broadcaster cannot do that but still is somehow institutionally interested, sponsoring it himself, they must not only recover the cost of the immediate program, but in light of the FCC's rules, invokable by other persons holding different views, or individuals specifically and disparagingly mentioned, there is the shadow cost of the free rider reply time, as is all quite clear in the *Red Lion* case itself.

Now, to resume on *Red Lion*, there were at least 12 other radio stations all receivable in the same community, and as you have remarked, that is quite a larger number than characterizes the newspaper industry in most American cities. Indeed, as we mutually know, even as the frequency outlets receivable in every market in the United States have tended to multiply, the number of locally based daily newspapers has tended to dwindle.

There is indeed, with regard to the arbitrary definition of its medium, daily newspapers, less diversity, as it were, less multiplicity of outlets, less distinctiveness of ownership by far than is true even if one takes a single kind of telecommunication, even if you confined yourself to AM and did not include FM—I do not know why you would not—and said nothing about UHF or VHF TV, much less all of these technological innovations.

Indeed, the same community, *Red Lion*, Pa., the style of the case, suggests that we are dealing with a station of enormous leonine power. Quite to the contrary, it is named after the small town in which it is located. *Red Lion* is also suburban to New York. It receives 13 television outlets. It is wired for cable. More than half of all of the residential homes receive a diversity of input from the New York stations. It is ironically germane, because Mr. Cook, the person who got the free rider advantage under the FCC doctrine, was a resident of New York City, and not *Red Lion*, as a matter of fact.

Those are the facts of the case. If you compare that with the other case, the *Miami Herald* case (and I know you are very familiar with that) in terms of communication power, and therefore the propriety of imposing these costs and self-censorship restraints upon the communicator, the comparison is all upside down. It is entirely inverse, and thoroughly perverse.

The *Tornillo* case dealt with the very large single metropolitan daily newspaper, the *Miami Herald*. It involved a candidate for local office who did not have any other access to comparable print outlets, although he may have had a very enthusiastic reception by local radio and television. I do not know. It is quite consistent that that could have been the case.

He is disparagingly mentioned in the editorial column of this very powerful daily newspaper, which for editorial reasons entirely

of its own discretion, a selfishness, if you will, an idiosyncratic preference, an ideological mean mindedness, declined to furnish Mr. Tornillo an opportunity for equivalent space in the paper.

The record is more interesting than that. The record suggests that it would have cost the Miami Herald nothing to have published the reply. The arrangement of type face on the paper, control over the way in which stories are arranged, shifting things around, and so on; the paper conceded that they were not prepared to show that they would have had even a marginal cost of \$1 in furnishing a reply, which is less true typically with radio and television, as I am sure you know, because it is a linear medium. That is, you have 24 hours and you can cut that up as much as you want, sell it however you want to group those segments, but that is it. You have more flexibility in a paper.

That refusal by the newspaper, to publish Mr. Tornillo's reply was forbidden by statute, and as we mutually know, the Supreme Court held unanimously however, that the free press means that editors, private publishers, private papers, private "print broadcasters" may not be imposed upon by the anticipation of having their transmitting facility, their newspaper, commandeered by third parties under the command of any agency or statutes which might to that extent detract from the character and exclusivity of the message they themselves deem sufficient for the public to receive. Now, in terms of diversity or scarcity, in terms of fairness or power, the cases are upside down.

In terms of practical scarcity, moreover it has never been clear to me why the comparisons are always made in the telecommunications field solely with other alternatives on the electromagnetic spectrum. That itself is somewhat puzzling. For if that which really animates one's concern as to the necessity and propriety for program content control in a Federal agency is primarily the assurance of diverse sources of information, so that with a little bit of effort the citizens in a given locality can find out alternative views and sources, then it has always seemed puzzling to me why the comparison is made within the FCC's profile of power and Congress own thinking only within the electromagnetic spectrum.

It is simply not the case that radio and television are the sole sources of information about what goes on in this Congress or what goes on down the street or what is titilating the mayor in the smallest town. Indeed, it is not merely that AM competes with FM and each to a certain extent marginally will compete with television so far as people's curiosity is concerned. They all compete ferociously with the blizzard of print that storms in from a thousand different sources by subscription and otherwise.

Indeed, in terms of diversity of informational sources, we may mutually recognize, that while newspapers have declined in terms of numbers in American cities, the overall availability of journals has held steady now for the last 20 years. Indeed, the specialization in journals, whether of special interest groups or ideological groups, is a highly refined market.

I have, respectfully, not meant to stray from the main point. The main point, I thought, that animated the original concern of the Federal Communications Act was the assurance that there would be no undue concentration of power with regard to a mysterious

medium the future of which was quite uncertain at the time. That main point merely recapitulates a very sad chapter in an early fragment of English history which led to the Stationers' monopoly and a century and a half of licensing practices which, once they expired in 1694, were never renewed, even in that country.

The original uncertainties of the 1920's arose from a technological uncertainty as to how at that time, with the electromagnetic spectrum not terribly well understood, one might parcel out bits and pieces, markets and wavelengths, and turn them over to property exchange systems, even as newspapers can be freely sold and their facilities transferred on exchange in the open market; the uncertainty of being able to do that, and the near mystery of electromagnetic airwaves in comparison with the familiarity of machinery and land, undoubtedly also contributed to the choice in Congress to go to the mechanism of reserving ownership really as quasi-public property superintended by a Federal agency which would issue licenses, all of which, incidentally, could still have been issued in winnowing the field, according to the financial competence of the applicant to operate the wavelength, a showing of technical competence to operate the facility correctly, and a scrupulous concern for the antitrust laws of the United States, which are well within the jurisdiction of the FCC to police as well.

So, to the latter extent, one would avoid undue concentration. In that respect, I want to commend the FCC for an excellent job. I do think its rules of cross media ownership and its efforts to deflect possibilities of combining power across media lines are appropriate antitrust concerns. It is striking to me, however, that if you take those considerations, you have really exhausted the licit interests of a licensing system.

I have not taken your time to recapitulate the variety of program content regulations in the course of this monologue. I have merely drawn back your attention to one or two of the most familiar and striking, but as to the rest as well, they are presented as a resumé in my testimony. I know of no legislative justification to continue them.

Finally, there is this as well. A lot of this matter has been strange, but at least administerable because of this physical difference between broadcast by electromagnetic spectrum and broadcast by print. That is to say, there has been at least a bright line, if not a logical one, enabling courts and legislative bodies to superintend in these puzzlingly different ways. But as you yourself are thoroughly well aware, and as is handsomely confirmed by the testimony you received just 2 days ago, that line is increasingly blurred. In the immediate future, it will be totally erased.

The idea of trying to sort out constitutional doctrine when the New York Times exercises its editorial autonomy, its investigative journalism, and its entrepreneurial independence in the office of the New York Times, and then must fret, however, with its connections with AT&T as part of its copy is transmitted selectively by microwave, then picked up on cable systems to be reported in the graphics on an oscilloscope as print, will thoroughly confuse the line between the "print press" and the "electromagnetic press."

Indeed, the ultimate fusion of the two media will make much more dramatic than we have ever seen before why these conversa-

tions that presume to define scarcity in terms of one medium, much less a particular kind of airwave length, rather than the variety of total sources of diverse communication accessible to American citizens, are misplaced. That, too, will be erased and the original logic for these concerns, it seems to me, will have substantially disappeared.

Well, that is a rather histrionic resume of an awful lot of material, but let me pause and see what we might usefully proceed to from here.

The CHAIRMAN. One of the things I am struck with is the *Simon Geller* case up in Gloucester, Mass. The poor fellow was broadcasting classical music all day. It was a one-man operation. He was denied the renewal of his license because he did not have sufficient diversity of programing. He did not have the weather, and he did not have the traffic reports. But Gloucester receives 40 other radio stations. It was not as if the citizens were deprived of that news.

Mr. VAN ALSTYNE. I do not understand it, Senator.

The CHAIRMAN. Assuming you follow that reasoning to its conclusion, that kind of licensing does not guarantee diversity. What it guarantees is repetition.

Mr. VAN ALSTYNE. It can. It can work both ways. And with uniform awkwardness in both directions. To expand on your example, the FCC's regulations, for instance, apply uniformly to each licensee in the application stage. Each is required, unlike a journal that wants to open a new market in a community, first to conduct a community survey. They then match the survey results as to what the ostensible sampled relative interests are with the tentatively proposed program profile.

The theory is that those two at least will be taken seriously into account by the FCC in case there is more than one applicant for the license. The extent to which that is true, I frankly do not know, and remain somewhat skeptical about, but the point is that that is indifferent to how well the community is already otherwise served by the diversity of pre-existing outlets. It may very well be that all of those interests already have a very large number of commercial communicators, of magazines, and radio and television, that are selling to them. It does not matter.

You can therefore strangely get exactly what you say, a kind of cross section replication among the various licensees who are precluded partly by the requirements of the FCC from competing by being more diverse from one another. It is an almost anticompetitive structure. There is some of the critical literature, for instance, that suggests that one reason why one may pick up on Sunday different kinds of newspapers and have all kinds of strange features, it is hard to tune into radio on Sunday morning without really being impressed (or depressed) by the striking uniformity of what it is that one hears.

That is the "public service" feature—each of the licensees rather dutifully mimicking the public feature service of all of the others by the harmless reproduction of church services within the community, all at the same time. It is just a remorseless uniformity.

If you contrast that with the diversity of the rest of the media, I think you will see that your own case is extremely strong. It runs the other way, too. There is a case where a very liberal judge—I

mean liberal politically as well as constitutionally—David Bazelon filed a strong dissent regarding the nonrenewal of a license for Carl McIntyre, who operated a station which devoted itself to some right-wing views that I would not particularly like, but I do not like them in a lot of journals, either, that I do not have any power to complain over through the FCC and have extinguished at non-renewal time.

Now, the irony of the *McIntyre* case on diversity is that while he was not diverse on his own station—that is quite right, just one point of view rather relentlessly presented, a combination of far western right-wing politics and old-fashioned evangelicalism—the interesting thing is that no one else in the receiving area was carrying any of that material. And so far as I know, not many of the journals generally circulating in the Philadelphia area, which was in the margin of his wavelength, not many of the journals were very sympathetic to that.

As a strong ideologue, as a matter of fact, Carl McIntyre was something of the equivalent of Mr. Loeb, the late editor of the *Union Leader* in Manchester, N.H., a strong right-wing journal that none of us would dare to suppose we could try to nonrenew at Federal license time.

I quite agree, it is a very strange situation.

THE CHAIRMAN. Let me take you through a couple of the questions that I asked the previous witnesses in terms of the logic of current regulation of what we now call cable broadcasting—even though cable signals are not sent through the air—and some of the things which are not regulated. Let's see if your conclusions are the same as those of the other witnesses.

First, today we apply content regulations to what we call broadcast, although we can apparently define broadcast as anything we want to define as broadcast. If you are not a broadcast service, you are not subject to these regulations. If you are broadcast, you are. So you have the anomaly of cable being broadcast, while the telephone line is not broadcast. It is a common carrier and is not subject to the same restrictions.

Now, let us assume that NBC sends out an editorial by direct broadcast satellite and you receive it in your home. Clearly, under the present law someone is entitled to a fairness response? We will not get into the argument of who gets to respond, but someone is entitled to respond under the present regulations of the FCC. Is that correct?

Mr. VAN ALSTYNE. That would be my firm impression, yes.

THE CHAIRMAN. And the same would be true if that message is translated by cable into your home rather than by direct broadcast satellite?

Mr. VAN ALSTYNE. It definitely would be true according to the last decisions of the Supreme Court as I have best been able to understand them. The Supreme Court has construed the statutory power of the FCC with regard to cable operators somewhat more limitedly than with regard to conventional broadcasters. But nonetheless, it is fully within the jurisdiction of the Commission.

It is a question as to the variety of things over which that jurisdiction extends. It does extend to the medium unmistakably. Any activities ancillary to broadcasting, which is a rough quotation of

the crucial phrase, do fall within the rulemaking agenda of the Commission and correspondingly within its program content regulations as well. That is true.

The CHAIRMAN. But if that same editorial comes in currently over your telephone wire and you look at it on your television set, that is not broadcast?

Mr. VAN ALSTYNE. Not as such, of course not. Since it uses wire and it communicates in interstate commerce, it is subject to the Federal Communications Act. But again, the judicial treatment of the statute—and I think it is accurate—is to discover that the will of Congress with regard to wire in this respect is as a common carrier. You have identified it.

The CHAIRMAN. But there is the irony. You are sitting in your home, the same editorial comes in. On the cable, probably subject to the fairness doctrine; if it comes in on the telephone wire, probably not subject to the fairness doctrine.

Mr. VAN ALSTYNE. That is correct.

The CHAIRMAN. And yet you, the average viewer sitting there looking at your set, do not have the foggiest idea how the message got there.

Mr. VAN ALSTYNE. Not at all. And you may have different rules applicable to different segments in the transmission process. So the carrier, for instance, as a "common carrier" literally by the legal meaning of that phrase, is denied any authority to censor the message, to send away someone who wants to pay a standard commercial rate for using that common carrier system.

But the operator, on the other hand, is subject to the other doctrines. So they may have to bear the shadow cost in the event that this is a controversial subject that is being carried, of at least supplying reasonable representation of contrary views and correspondingly reply times insofar as a person may be disparagingly mentioned in the course of that presentation. You are quite right.

The CHAIRMAN. Now let us move from the NBC editorial to the New York Times editorial. Clearly, today if it rolls off their printing press and goes out to your home in the paper, there is nothing yet, the court has said, that would require equal time, fairness, or anything else.

Mr. VAN ALSTYNE. Quite right.

The CHAIRMAN. If the Times sends their editorial up to the satellite—and we are now licensing some of these satellites as broadcast—and it comes down into your home, would fairness and equal time require or allow a response?

Mr. VAN ALSTYNE. I assume that it clearly would, as applied to the broadcaster, yes.

The CHAIRMAN. And it does not matter that the originator of the editorial is now the New York Times, as opposed to NBC?

Mr. VAN ALSTYNE. It should not logically matter. If it did, then we would find ourselves in the absurd position, for instance, that even a local broadcaster who simply read copy from the local paper would be insulating himself from any of these doctrines by the stratagem of that technique. That is unimaginable and I am sure the FCC would zealously penetrate the fraud, as it were, instantly.

But if that is correct, then the conclusion you have drawn is also sound.

The CHAIRMAN. Now, apparently if the New York Times editorial is sent over the cable system, if you and I understand what we think is the FCC's present policy, it is probably subject to fairness and equal time.

Mr. VAN ALSTYNE. It may be. As I say, the FCC has a lot of discretion to review some of these doctrines, with all respect. Indeed, in its origin the fairness doctrine is without explicit statutory foundation. There is no language. It is all worked out of the phraseology "public interest." But it has been acquiesced in by Congress to give it good legal status.

The CHAIRMAN. Yes, fair enough. Congress has not enacted the fairness doctrine. The FCC has promulgated it and we have acquiesced in it.

Mr. VAN ALSTYNE. That is quite right.

The CHAIRMAN. What often bothers me is some people I have talked with who are convinced that if we could get this FCC to repeal fairness and equal time, that is all we need, that our liberties are henceforth safe.

Mr. VAN ALSTYNE. Well, that is clearly not the case, of course, because under those circumstances what the agency grants the agency may take back. So that is a very uncertain situation.

I mean to suggest nothing sinister about this, but we are mutually aware that agencies, of course, while they have a very good degree of built-in congressionally supplied independence, are nonetheless subject to periodic restaffing. Some of the decisions by the FCC have even drawn comment from the Supreme Court, the decisions at least carry the appearance—they have not suggested, because they do not presume to make those suggestions—of pure politics in the outcome of decisions that were made.

The CHAIRMAN. We talked about that earlier in the *Carter-Mondale* case—the 4 to 3 decision, with the Commission splitting exactly on partisan lines.

Mr. VAN ALSTYNE. That is quite right, and as long as the power is there and as long as American citizens are encouraged by their Congress to regard themselves as appropriately entitled to regard each television or radio operator as their servant, as it were, or their public fiduciary, then one can be reasonably certain, and quite rightly, that the public will insist that their "rights" be vindicated.

Indeed, in other cases that I have seen the FCC has attempted to deregulate. It has attempted to be more experimental in leaving some of the medium freer, as it were, to pursue its own course and see how the new diversity of the electronic marketplace itself might work. But in an instance or two they have been reversed by the D.C. court on the complaint of "aggrieved parties" as consumers who want those program content regulations enforced and who are opposed to the discretion of the FCC to deregulate.

So, the possession of the power is a handicap in both directions. As you have observed, what they collapse they may reinstitute unless the statute is modified, and indeed, when they attempt to collapse it to some extent, they are then sometimes reversed in the courts on the complaints of private citizens who demand a fuller schedule of regulation.

The CHAIRMAN. Professor, it seems to me we are coming to simply this: One, the meshing of print and electronics is moving along at such a pace, that it is going to be very hard to distinguish between the two for very long. Clearly, we can distinguish a piece of paper from a television screen, but the method of transmitting the information is simply going to mesh.

Two, the current policy of the FCC, acquiesced in by the Congress and supported by the courts, is that we, the Government, own the spectrum, or if we do not own it we certainly are the public's fiduciary and are entitled to regulate it. And we regulate the broadcast part of it, and soon if you cannot tell broadcast from print as we now use those terms, one of two things has to happen: either we back off the regulation of broadcast or we move on to the regulation of print.

I do not know how we can come to any other conclusion: Can we?

Mr. VAN ALSTYNE. That is a welcome rhetorical question. I share your sense that the antiseptic sealing off of two regimes of regulation cannot last. The public pressure should become insurmountable.

I should think that there would certainly be State and local, if not Federal, efforts to revive the sort of statute tested in the *Torillo* case, and under the fusion of the media it may well be that a case similar to that coming up in the future would come out the other way, and even the conventional press may find itself dismayed as a consequence.

Indeed, I am very puzzled, and I am genuine about this. It is not meant to be merely convenient and rhetorical. I am puzzled because so many of the corporations have interests in more than one medium, why conventional journalism seems relatively passive with regard to the harder censorial lot of their electromagnetic cousins. It is strained. I do not understand it. I do not know whether it is professional envy because of the alleged domination of the cool medium or just what it is.

But it is an unhappy truth. Indeed, there is a recent book by a very able fellow named Lofton that the print press unfortunately has been most zealous about freedom of the press only when the print press itself was under threat. When other groups in the United States were themselves the object of widespread public animus or Government oppression, historically, unfortunately the print journals of the United States have not been equivalently concerned—a source of considerable sadness to me that that is true here.

The anomaly of the FCC program content regime is not appropriately criticized, it seems to me, in the print medium. Your observations should be sobering to them, that they should see their fortunes, not just in a spiritual first amendment sense but in a practical legal sense, as very much in jeopardy.

The CHAIRMAN. I am struck by the fact that when I talk with many people in print, they are quite familiar with the *Miami Herald* case at the U.S. Supreme Court level and are equally unfamiliar with the decision and the rationale for the decision by the Florida Supreme Court. That is a perfectly respectable supreme court. But based upon facts 12 years ago, they said: *Miami Herald*,

you are so electronic that we feel you are governed by the *Red Lion* case, and the Florida Supreme Court upheld the statute.

Mr. VAN ALSTYNE. That is quite right.

The CHAIRMAN. And that could just as easily happen in the U.S. Supreme Court as in the Florida Supreme Court.

Professor, I do not think I have any more questions. It has been a very informative and sobering morning, very sobering. I appreciate your getting up out of that fog and coming up here to join us.

Mr. VAN ALSTYNE. I appreciate your courtesy in inviting me, and I will be certain to submit the balance of my formal testimony later in the week.

[The statement follows:]

STATEMENT OF WILLIAM VAN ALSTYNE, PROFESSOR, DUKE UNIVERSITY SCHOOL OF LAW

INTRODUCTION

In 1476, a man named William Caxton brought to England a new invention. It was a Gutenberg print press with movable, reusable typeface. The technical and commercial advantages of this new technology revolutionized the information business. Cheaply producible, multiple copies of printed material enormously decreased the costs and enhanced the broadcast capacity of those who could afford these presses.

The reaction of the government to this development was to emphasize the public-interest hazards of unregulated print presses, rather than to emphasize the possible free speech gains of leaving them unregulated. And thus, in 1557, a select group of London Stationers were granted a royal charter in order to confine the ownership of presses to "responsible" parties. By 1585, the Stationers Company was reestablished under the supervision of Star Chamber. A full-scale licensing system was now in place. It persisted for more than another century, finally expiring in 1694 and never thereafter renewed.

A fair portion of the justification for this licensing system had a peculiarly modern ring—much the same ring as is still listened to, in the United States, in respect to the newer media (radio and television) which are licensed and regulated by the Federal Communications Commission. Printers capable of influencing mass audiences cheaply and quickly were thought to be appropriate objects of special precautions and of fiduciary obligations. The existing common law controls were regarded as adequate to redress the abuses of free speech by street corner orators. These same controls were held to be plainly inadequate, however, against the elusive advantages of unregulated print presses. The individual speaker is easily identified. The location of the print press, whose anonymous products are not self-identifying, required at least a system of press registration. The damage inflicted by a scurrilous statement uttered aloud might typically be neither irreparable nor of overwhelming impact. Private actions for defamation, or occasional criminal prosecution, might therefore adequately contain its harms. But scurrility in widely circulating, mass copy publications may be more nearly irreparable and overwhelming, as well as more difficult to track down to its source. Prevention, and not merely compensation, was thus more justified. The special credibility of the printed word, i.e., its impressive impersonalism, its sheer graphic authority in comparison with ordinary speech, even now tend to carry greater weight than the mere spoken word. Thus, licensing, administrative power to suspend and revoke such licenses, and administrative powers to impose special fines for violating special duties and restrictions laid upon the press, came to England.

In the United States, on the other hand, there has never been an Act of Congress requiring the registration or licensing of print presses. No private owner, moreover, is subject to any governmental prescription of his or her own editorial policy. Not only may large and small newspapers print whatever news and features they idiosyncratically prefer, reflecting only the preferences of the publishing enterprise subject solely to the discipline of the commercial marketplace, none can be obliged even to yield space for a "reply" or for the presentation of other views.

The autonomy of each publisher in these respects is the same, whether the publisher is small and relatively uninfluential, or whether it is very large, operating the sole daily newspaper that may dominate the print journalism of local news, with the commercial advantage of high-speed modern presses few can afford to own.

The first amendment to our Bill of Rights has alone guaranteed the diversity of the free press in the United States. The amendment has been applied by the Supreme Court especially to condemn any press licensing system and any effort to prescribe the content of what is published according to government impressions of "the public interest." Unquestionably there have been abuses of this freedom, by major publishers, which abuses might have been averted had not the first amendment prevented the government from more closely licensing and supervising the publishing policies of the press. On the other hand, the dangerous policy of the first amendment has provided the United States with what is also unquestionably the most diverse and remarkable free press in the world.

None of this unruly press, from the smallest and most bizarre underground newspaper, to the tabloids that crowd the check-out stands of supermakets, to the most influential metropolitan or national newspapers, "represents" us. Rather, we find our own level in selecting from this blizzard of print what we want. We also put up with what we think is irritating or unfair in a given journal, because we decline to forego other features we think we just cannot do without. In any case, we nonetheless accept the reality that these newspapers and journals are no more public agents or public fiduciaries, than each of us is such an agent. Some of us reflect high personal standards, at least most of the time. Some of us do not care. We sort ourselves out individually, even as the press sorts itself out as well—by being what we choose to be and by taking our chances accordingly.

Virtually none of these things is true, however, of the "other" press in the United States. and the very different treatment accorded this "other" press is all the more remarkable because, comparatively, there is certainly nothing more exotic or startling about the characteristics of this other press than the equivalent special advantages which originally led to the imprisonment of print presses in a licensing system.

Additionally, this other press does not exist in a communications vacuum. That is, it is an altogether artificial and false view to regard radio and television as an array of publishers who compete only with one another. It is equally a false view to suppose that the sources of information and entertainment available to each citizen's selection and preference are confined to some selection or some mix of only what radio and television may provide. The same advertising revenue upon which commercial radio and television depends is also strongly bid for by the diverse mix of "the regular press." The same audiences sought for rating purposes by television and radio is also sought just as much for subscription and single-copy sale purposes by the diverse mix of journals, tabloids, and newspapers. Equivalent scales of economy achieved by syndicated programs or network products have their counterparts in scales of economy that explain the syndication of columnists, feature writers, and cartoonists. Functionally similar characteristics that account for the advantage of dominant network journalism in respect to NBC, CBS and ABC News are familiarly found equally in the regular press, in the form of the AP, UPI, Reuters, and still others. And, most ironic of all, insofar as single-publisher domination of local news may be of interest, neither radio nor television command in any community the equivalent dominant position of particular newspapers. For there are in fact vastly fewer communities with more than one local daily newspaper (the principal source of local, print-news), then communities with but one local source of television or of radio news.

Despite these considerations, the "other" press, the electronic press, is a licensed press subject to anti-competitive program-content prescriptions that censor it and regulate it. The arrangement originated formally in 1928, with the congressional enactment of the Radio Act, partly on the urging of principal broadcasters already underway who welcomed the federal protection of their initial advantages by means of a national licensing system. It developed more comprehensively in 1934, with the enactment of the Federal Communications Act.

The licensing standards of the superintending FCC are the same for every applicant and licensee, irrespective of the actual number and diversity of other licensees receivable within their broadcast area and irrespective as well of the actual number and diversity of all other sources of news, information, entertainment, or opinion in the same areas. A 1,000 watt radio station may compete in its receiving area with twenty AM and fifteen FM other radio stations. It may compete, at the same time, with twelve television stations locally received as well, and of course with the local newspaper. Its highest commercial rate (one hour of "prime time") may be twenty-five dollars. It is nonetheless subject to the same program-content restrictions and obligations as though it were a 50,000 watt station without competition in a 300-mile urban radius. The situation is most peculiar when one recalls that none of these

restrictions or obligations are either applicable in fact or constitutionally imaginable if imposed by the FCC upon the Los Angeles Times.

There is, in respect to this puzzling licensing system, no unanimity of dissatisfaction even among those subject to it. There should be, however, no surprise in that fact. There was assuredly no unanimity of dissatisfaction among the printers who made up the government-protected monopoly of London Stationers under the licensing laws of England. The original Radio Act of 1927, it will be recalled, was partly brought about by principal broadcasters already operating at large, whose hegemony on the airwaves would be significantly improved by an arrangement licensing their frequencies for their exclusive use, limiting the number of frequencies available for the licensing of competitors, and imposing uniform obligations on all licensees to eliminate competition beyond a limited permissible diversity of program content. Licensing-with-strings-attached, in short, disadvantaged some of "the press" in England, but certainly not all of it. Equivalently, licensing-with-strings-attached in the United States has similar consequences. All that can safely be said about it is that it does confine the broadcast presentation of the licensees to the limitations imposed by Congress and the FCC, producing to that extent less diversity and less freedom of this press. Whom this helps, and who is damaged by the arrangement, is a much more complicated question.

The necessity and the propriety of continuing the present regime of the Federal Communications Act is long overdue for a critical review in this Congress. The appearance of additional electronic and electromagnetic devices, from direct satellite broadcasting through cablenews services (combining newspaper service with "home delivery" via regulated wire), merely add to the timeliness of this Committee's work. The very brief time I have had to consider the questions the committee has outlined compels me to furnish abridged and very inadequate answers. But I am grateful to be here, and I commend you on taking this initiative. I am hopeful it will lead to major revisions in the Federal Communications Act and in the uncertain policies of the FCC. What follows now are my brief answers to the questions on which you invited comment.

1. What direct or indirect program content controls are imposed upon the electronic media?

The principal control arises from the statutory power of the FCC to award licenses (without which the use of the airwaves is generally a federal crime), and to suspend, cancel, or nonrenew a license (at the end of a three-year period), according to "the public interest, convenience, and necessity." See 47 U.S.C. §§ 151-609. The FCC gradually interpreted this standard as one which empowered it to go beyond the determination of an applicant's financial capacity and integrity, its technical competence to operate a broadcasting facility, and the application of anti-trust considerations in assuring a fair degree of de-concentration (and, later, limitations on cross-media ownership), within the broadcasting industry. With the acquiescence of Congress, it presumed to assess the proposed content of programming in determining whether award of a license would be consistent with its view of the public interest. (The history of these developments is reviewed quite fully in Hagelin, "The First Amendment Stake in New Technology: The Broadcast-Cable Controversy," 44 U. CIN. L. REV. 427 [1975]; and in Simmons, "Fairness Doctrine: The Early History," 29 FED. COM. B. J. 207 [1976]. The most recent general summary of the fairness doctrine rules is in 30 RAD. REG. 2d (P & F) 1261 [July 12, 1974]; see also 39 Fed. Reg. 26,372 [1974].)

A partial summary includes the following features. Each applicant is required to make some survey of "community interests" within the receiving area of the broadcast signal for which it seeks a license, and to file with its application a profile of proposed programming according to the percentage of time it proposes to devote to each of fourteen Commission-described subject areas. In this respect, the programs of the broadcaster are not to be solely those it wishes to risk. The implication is clear that program profiles more proportioned to "the community," rather than reflecting the ideological, aesthetic, or economic notions of the licensee, will be more likely to be granted a license. A willful failure to conform to the proposed program profile, even if the departure is to offer programming of viewpoints not otherwise significantly advanced by any other licensee or group in the same community, may (and has) been deemed sufficient cause to nonrenew the license. See *Brandywine Main Line Co. v. FCC*, 473 F. 2d 16 (D.C. Cir. 1972), cert. denied, 412 U.S. 922 (1972). Professional commentary has suggested that the principal result of this constraint is to minimize ideological diversity among licensees and to encourage uncontroversial "public interest" fare, e.g., rather standard religious broadcasting quite uniformly on Sunday mornings.

Each licensee is required to devote a nontrivial portion of broadcast time to the treatment of public issues deemed significant (as determined by the FCC) within the broadcast area—at the licensee's expense if sponsorship is unavailable, and whether or not the licensee does not wish to "speak" to the subject, and whether or not the same subject has been prominently discussed in other sources. Each licensee who presumes to broadcast a partisan perspective on any public issue of a controversial nature must take care to provide a "fair representation" of other views, whether such other views are already well presented over other frequencies in the same market, whether their presentation may be contrary to the broadcaster's own views, and without regard to the unavailability of sponsorship to meet the free rider expenses of the countervailing presentation. Additionally, if within the course of presenting a controversial public issue and identifiable person is referred to in a disparaging fashion, whether or not the statement is accurate the licensee must use reasonable effort to contact that person and provide him free time for a personal reply. The obligation arises whether the original broadcast was the program of a third-party who paid standard rates for the broadcast time, and not a presentation by the broadcaster. The reply time must be furnished without charge regardless of the other party's ability to pay and the resulting cost to the broadcaster. See *Red Lion Broadcasting Co. v. FCC*, 395 U.S. 267 (1969).

Nonrenewal of license, suspension of licenses, or the imposition of an administrative fine may be imposed upon a licensee who broadcasts "indecent" language, or "vulgar," or "drug-oriented" music deemed by the FCC to be contrary to the public interest. See *FCC v. Pacifica Foundation*, 438 U.S. 726 (1978); *Yale Broadcasting Co. v. FCC*, 478 F. 2d 594 (D.C. Cir.), cert denied, 414 U.S. 914 (1973); *Sonderling Broadcasting Corp.*, 27 RAD. REG. 2d (P & F) 285 (1973).

Pursuant to 47 U.S.C. § 315 (1970), subject to certain limited exceptions if a broadcaster permits any legally qualified candidate to broadcast, it must make equal time available to every other legally qualified candidate for the same office.

The Federal Communications Act nominally forbids "censorship" (47 U.S.C. § 326), but the meaning of the term has been confirmed merely to forbid specific attempts to edit proposed broadcasts in advance. (See the *Pacifica Foundation* case, *supra*.) It does not forbid nonrenewal (and thus complete elimination of the broadcaster) for failing to conform to the program profile the content of which and submission of which may have controlled the award of the license in the first place, nor does it forbid utilizing non-conformance to the "fairness" doctrine, the "reply" doctrine, the candidate's equal time requirement, or the restrictions on "vulgarity" as a source of nonrenewal or other sanction. The aggregative self-censoring effects and aggregative centripetal tendency of these various regulations, to produce essentially replicative, centrist-oriented, relatively colorless and relatively uncontroversial radio and television programming in the United States (in comparison with the starkly greater diversity within the print press) seems highly probable and it has frequently been asserted. The extent to which it wholly explains the program characteristics of the electronic media, however (as distinct for instance, from consideration of commercial self-interest in avoiding controversy), is necessarily uncertain.

Pursuant to its general rule-making power, the FCC also exerts strong indirect program-content controls. The best known is the "prime time access" rule, ostensibly meant to encourage a greater diversity of independent productions (*vis-a-vis* network productions), but alleged to result largely in merely extremely cheap voyeuristic game shows and syndicated reruns, reducing broadcaster discretion and imposing an additional anti-competitive childish sameness of the airwaves, ironically at an hour otherwise most likely to attract high viewer interest. A variation of such indirect program-content control, results from FCC informal "eyebrow" lifting, its censorship pressure to compel broadcasters to agree among themselves (!) not to carry certain programming during "family" viewing hours. These and other matters are reviewed in Bazelon, "FCC Regulation of the Telecommunications Press," 1975 DUKE L. J. 213; Lange, "The Role for the Access Doctrine in the Regulation of Mass Media: A Critical Review and Assessment," 42 N.C.L. REV. 1 (1973).

An acute difficulty with the broad, program-content powers of the FCC is that the existence of the power generates its own demand for the full use of that power, sometimes even against the desire of the Commission itself. Judicial review of Commission refusal to act against a licensee has sometimes made it hazardous for the FCC to permit an experimentalism within the media. In brief, the availability of judicial review, to private groups aggrieved by an FCC refusal to intervene against a broadcaster, exerts considerable pressure upon the Commission to act contrary to its own judgment.

At the same time, the degree of discretion reposed in the FCC may as readily lend itself to selective, governmental, political partisanship. In *CBS, Inc. v. FCC*, 453 U.S.

367 (1981), for instance, a majority of the Supreme Court upheld the disputed power of the Commission to require broadcasters to yield time for the airing of a "documentary" on the record of the Carter Administration, over the unwillingness of any network so to do. The dispute arose under a 1971 Act of this Congress, authorizing the FCC to revoke a broadcaster's license for "willful" failure to allow "reasonable" access to its facilities by a legally qualified candidate for federal elective office. The networks refused to set aside their regular programming, arguing that the statute was inapplicable insofar as the political and partisan documentary was pressed against their wishes twelve months prior to the election which might involve Mr. Carter as a candidate. Their position was that "reasonable" access should not be interpreted to limit their own programming discretion virtually a year ahead of a given election. The Commissioners of the FCC disagreed, by the narrowest of majorities, "holding" 4 to 3 that the networks could be required to yield. Dissenting from the Supreme Court's acquiescence in this outcome, Mr. Justice Stevens noted that the vote within the FCC exactly paralleled the political party affiliations of its members: the majority consisted of four Democratic Commissioners, the dissenters of three Republican Commissioners. Mr. Justice Stevens did not presume to say that the licensing-with-strings-attached power of the FCC had in fact been abused by a governmental agency to favor a particular political party. Rather, the point of his dissent was that it was dangerous to free speech to contemplate such a power in a federal agency, and he was therefore unwilling to interpret the statute as granting such power to the FCC. But, of course, his opinion was a mere dissent. The law, overall, is quite settled to the contrary. The FCC possesses very great program-content power over the "other" press of the United States. It is granted that power in the classic form of a government monopoly licensing agency, without whose continuing permission it is a criminal offense to function as a broadcaster.

2. *How does this treatment of the electronic media differ from the treatment of the print media?*

As already implied by the foregoing review, and as expressly stated in my introductory remarks, "this treatment" of the electronic media differs completely from "the treatment" of the print media. Concretely:

1. It is not a federal crime to own, operate, publish and distribute newspapers or other printed matter without a federal license nor, consistent with the first amendment, is it plausible to suppose that such an arrangement could be sustained;

2. No person, partnership, voluntary association, corporation or other enterprise is required to satisfy any standard of "public interest, convenience, or necessity" is a condition of publishing and distributing whether it wishes;

(a) No public authority requires any enterprise to survey "community interests," or to compete for restricted distribution privileges by filing "program profiles" according to various "public interest" categories;

(b) No publisher can be bound by any public authority to any program profile.

(c) Whether a newspaper covers local issues of communitywide controversy is wholly a function of its own determination. There are no laws presuming to instruct newspapers or other publishers what they must cover and it is virtually certain that any such law would be held to violate the first amendment;

(d) A publisher providing coverage of controversial issues need give parties holding views at odds with those the newspaper favors no space and no representation at all. The extent to which newspapers may provide diversity is strictly a function of each newspaper's own choice;

(e) An individual mentioned disparagingly, even if in the dominant newspaper of the city in which he is a candidate for public office, and even supposing he is otherwise without means of countering the influence of that newspaper so far as the outcome of the election is concerned, has no legally enforceable right even to purchase reply space in the same newspaper, much less to have whatever reply he may submit printed without charge. A state statute, presuming even to this modest extent to interfere with the complete editorial autonomy of a newspaper, has been held to violate the free press clause by unanimous decision of the Supreme Court. See *Miami Herald Publ. Co. v. Tornillo*, 418 U.S. 241 (1973).

3. Newspapers are not obliged (and presumably cannot be compelled) to provide candidates for federal office "reasonable access" to their pages, nor are newspapers that see fit to promote or provide space for some candidates under any obligation to provide "equal" space for all other legally-qualified candidates.

(4) Words and phrases persons may consider "vulgar," "indecent," or otherwise unfortunate may not be forbidden on that account even in newspapers readily accessible to minors and to others who may be offended.

(5) Newspapers may provide such coverage of crime or violence as each sees fit to do, and there is no constitutional power vested in government to impose restrictions on what it might regard as wholesome or suitable for "family reading."

The print media are, of course, subject to the anti-trust laws of the United States. Newspapers may also be regulated by statutes otherwise valid under the first amendment, but generally in no different respect than a lone pamphleteer. Thus, a newspaper is subject to civil libel law (as of course so also are radio and television), to otherwise-valid anti-obscenity laws (as are radio and television), to criminal statutes applicable to the knowing incitement of serious crime under circumstances imminently likely to induce it (as are radio and television), etc. The point is, of course, that in all of these respects, newspapers and broadcasters are treated similarly, namely, in the same fashion as are all others whom the first amendment protects substantially but not absolutely. In respect to all of the additional constraints imposed on radio and television exclusively identified to the licensing regime of the FCC and the Federal Communications Act, however, there is no corresponding set of limitations on the print media whatever. Nor, constitutionally, can there be.

3. *Do current statutes, FCC regulations, or court decisions make it possible for these kinds of content regulations [already applicable to radio and television] to be extended to new services, such as teletext, videotext, or the "electronic newspaper?"*

I believe the answer to this question is "yes," but significant aspects of the question are quite complicated and not within my own competence adequately to answer. Current statutes would appear to establish FCC jurisdiction in respect to the variety of "new services, such as teletext, videotext, or the 'electronic newspaper,'" examples of which were outlined in testimony before this Committee just two days ago, on September 22nd. As a first cut at the problem, they are evidently all within the Commission's authority insofar as the following observation by the Supreme Court applies:

The Commission's authority to regulate broadcasting and other communications is derived from the Communications Act of 1934, as amended. The Act's provisions are explicitly applicable to "all interstate and foreign communication by wire or radio * * *." The Commission's responsibilities are no more narrow: it is required to endeavor to "make available * * * to all the people of the United States a rapid, efficient, Nation-wide, and world-wide wire and radio communication service * * *."—*United States v. Southwestern Cable Co.*, 392 U.S. 157 (1968)

The new services adverted to utilize wire or radio, they all involve communications, and all are sufficiently intimate to impacts on interstate and foreign commerce.

As a second cut at the problem, however, the same opinion of the Court noted that the commission's authority "is restricted to that reasonably ancillary to the effective performance of the Commission's various responsibilities for the regulation of television broadcasting." Subsequent decisions, as well as subsequent proceedings within the FCC itself, have expanded on that phrase in "explaining" the extent to which the Commission's authority may be more limited in respect to regulations not applicable to broadcasters as such, but to services reasonably ancillary thereto. I am not sufficiently well informed to try even to sketch the manner in which this ancillary jurisdiction has been qualified and limited. I suspect the staff reports of this Committee can provide a far more lucid description than my own uncertain impressions. The matter is made more difficult, however, because the Committee's question is framed in terms of "these kinds of content regulations." (Emphasis added.) A single example may make clear why I cannot answer that question with any precision.

In *United States v. Midwest Video*, 406 U.S. 659 (1972), the Supreme Court, by a five-to-four vote but without an opinion for the Court, sustained the FCC's jurisdiction to issue regulations requiring that CATV operators must provide "program origination" facilities (a rule the FCC repealed just two years later, in 1974). In 1979, on the other hand, in *F.C.C. v. Midwest Video* (II), 9 S. Ct. 1435, by a vote of six-to-three the Court affirmed a lower court holding that the FCC did not have jurisdiction to require CATV "access channels" for various third-party users, without discretion in the CATV company to refuse access. The Court accepted the characterization of the rule as effectively having "transferred control of the content of access cable channels from cable operators to members of the public who wish to communicate by the cable medium." Expressly disclaiming that such an imposition would necessarily violate the first amendment, the majority concluded simply that Congress had forbidden the FCC to impose "common carrier" modes of regulation, that the challenged rule was effectively just such a regulation, and that therefore it was beyond the Commission's statutory power. The three justices in disagreement con-

cluded that the regulation was reasonably ancillary to the Commission's broad powers over broadcasting—but expressed no view on the constitutional question (of editorial control) and would have remanded the case for the lower court to confront that issue.

The Federal Communications Act is nearly fifty years old. The amazingly rapid development of communications has virtually overwhelmed it. There has been little uniform agreement within the FCC respecting the scope of its power over all of these developments or what "the rules" should be, and quite understandably so. Correspondingly, the judicial decisions are full of uncertainties and tentativeness—and quite understandably so.

If, however, I may try to cut through to what I think is the point of the Committee's question (relating it back to the particular content-related powers previously enumerated with respect to conventional radio AM and FM licensees, and conventional VHF and UHF broadcasters and licensees), the safest observation may be that current developments have virtually disintegrated the logic, if not the statutory (and constitutional) foundations, for nearly all of them. I have only the greatest sympathy for the immensely hard tasks of the FCC as it attempts to allocate new frequencies and new licenses respecting the new technologies, without prematurely destroying investments by others (as consumers as well as producers) in existing facilities, albeit also without becoming a captive of existing broadcast interests. The manner in which the total "property" of communications media lacks solidity makes the race for new commercial exploitation exquisitely hard for the FCC to referee. But, significantly, given the enormous proliferation of communicative choices, and the startling consumer alternatives as well, even without taking into account the disappearing distinction between "newspapers" and teletext-with-printouts, it does seem very clear that the logical foundations for much of the doctrines we have been discussing have virtually crumbled. Statutory and constitutional considerations wholly apart, therefore, I should suppose that the FCC would itself wish to reconsider its conventional content-related regulations.

4. *"Spectrum scarcity" has been the primary justification for government regulation of electronic speech. Was this ever a valid rationale for the framework erected by the Communications Act of 1934? Is there any basis for the assertion that spectrum scarcity remains a valid rationale today, in light of advances in communications technology?*

The "scarcity" argument is more complicated than it may seem. Strictly speaking, the Supreme Court did not rely upon it exclusively. Rather, the full (critical) sentence in the key decision, *Red Lion*, was this:

"In view of the scarcity of broadcast frequencies, the Government's role in allocating those frequencies, and the legitimate claims of those unable without governmental assistance to gain access to those frequencies for expression of their views, we hold the regulations and ruling at issue here are both authorized by statute and constitutional." 395 U.S. at 401 (Emphasis added)

Even the added emphasis to the phrase, "the Government's role in allocating those frequencies," does not make clear what is meant. The key is not scarcity per se. It is, rather, "scarcity" in an atypical sense plus "property." This is what I mean.

Scarcity in the usual sense means merely that demand exceeds supply. It exists along a continuum. Ordinarily, the degree of scarcity is measured by price. A familiar example is that of air. Though every person may want it (indeed, must have it), if it exists in such abundance that no one's consumption, and no aggregate of consumption, even noticeably diminishes a seemingly inexhaustible, unowned supply, a person would be foolish to pay anything for it. It is not scarce; it is literally a free good. As uses increase (along with pollution), the assumption of inexhaustible, ubiquitous, quality-air availability becomes increasingly untrue. Then, and only then, does the occasion for some system of rationing arise.

Though the subject may be "airwaves," rather than "air," the case is no different. Neither is it different if one (arbitrarily) defines the consumption good as "VHF airwaves," rather than airwaves more inclusively. If, then, there were 500 VHF "channels" capable of separate, clear, coherent use within a given receiving area, but at least 501 persons all of whom wanted to use a channel, then we have a condition of "scarcity."

The example is deliberately selected because, in the context of these Hearings, one would not ordinarily imagine that a community containing 500 VHF channels in lacking in VHF channels. Moreover, in a large sense, isolating "VHF" channels seems arbitrarily narrow if one is thinking more in terms of "communicative opportunities," or "sources of information" as the consumption good with which we are

concerned. The degrees of marginal substitutability of "UHF" channels, or of AM radio, and/or FM radio, and/or coaxial cable, and/or newspapers, etc., should certainly affect our thinking about the subject, depending on what we think the real subject is.) Nonetheless, if at least 500 plus 1 persons all want to command a VHF channel (e.g., to "own in fee simple" a VHF channel), and we stipulate that there are "only" 500, we do have scarcity.

I apologize for the homely way of getting into this subject, but it cannot be helped. The point is to establish with some clarity what we mean to talk about. In the way we have chosen to talk about "VHF channels," we have already made clear that "scarcity" may exist despite the existence of many channels (just as there may be no scarcity though there were but one channel—which no one had the slightest interest in exploiting).

Consider next this variation. The scarcity we have posed would disappear if, although there were 500 local channels already owned by each of 500 persons, and one other person who also wanted one, the sole dissatisfied party could costlessly acquire a VHF channel from across the river, and costlessly move it in, to broadcast locally from it as much as he or she liked. The assumption we have made is that one can bring in another VHF channel as one might bring in additional sticks of wood: that the space within the community is ample to accommodate it, and that the act of bringing in the new channel is utterly without effect on the other 500 channels. Here, however, is where things begin to fall out and distinctions begin to get made.

So far as newspapers are concerned, as a practical matter they are very much like the sticks of wood we have imagined. Whether anyone will want more of them than are already locally produced is, in the first instance, irrelevant. At least it is true that anyone who wants to "bring one in," i.e., start one up, has no physical constraint in doing so. He damages no one else's wood (or newspaper) merely by bringing in a stick (or a newspaper) of his own. If therefore he competes with the pre-existing newspaper (e.g., by first just giving it away free and later, if homeowners like it enough that their own new consumption interest creates "scarcity" for it), that may of course damage the market interests of other stick-or newspaper-sellers—but that is another story.

In fact, of course even the finding and transport of bringing in a single stick of wood will not be utterly costless. And, even more obviously, starting up a newspaper will be extremely costly: the component parts are all scarce goods. But these costs are thought to reflect (merely) "economic" scarcity. In respect to VHF channels, the situation is different. Whatever the "n" number is at any given state of refined VHF technology and FCC generosity (i.e., that the FCC released all VHF channels to private users and reserved none at all), it is quite plain that we can have: (a) scarcity and (b) a maximum number that cannot be locally added to without undercutting the coherence of the pre-existing "n" number. It is in the latter sense that the airwave controversy is treated by the Supreme Court as different from the newspaper controversy, although it is by no means the only alleged distinction.

It separates "economic" scarcity in its general usage from "technological" scarcity, or "airwave" scarcity, even after taking into account the earlier discussion of scarcity. Whatever the existing number of newspapers in a given community, there is always room (physically) for one more. If existing technology plus even the most maximally generous policy of the FCC made "n" the number beyond which channel clarity would be unacceptably compromised, on the other hand, then "n" fixes a physico-legal scarcity within which all subsequent trades, exchanges, or other form of rationing must take place. This is one of several basic distinctions being entertained by the Supreme Court. Effectively it translates into the proposition that one's economic inability to start up a newspaper of one's own does not, consistent with the first amendment, enable the government to permit him to commandeer a newspaper already owned by someone else—even for a day, even for a minute, even to offer a "dissenting" view or to "reply" to a disparaging comment about himself. It is the combined free-speech-and-property rights of the newspaper owner (whose newspaper others would seek to commandeer) that are deemed paramount in this instance—not those of would-be users or those of "the public."

In returning to our original problem, however, suppose that in respect to the airwaves Congress declares that private property rights as such are precluded, i.e., the basic system of allocation will not follow the general pattern of land allocation, or of personal property allocation. Airwaves shall not be allocated by permitting "frequency rights" to be acquired in fee simple: not by lottery, not be first-come/first-served, not by public auction, or by any original allocation process whatever. To be sure, broadcasters may acquire and own outright transmission facilities, buildings, apparatus, etc., but no one may either own or acquire any property in an airwave.

Which is, of course, exactly what the Radio Act (and then the Federal Communications Act) did provide. This gets us to the significance of the phrase, in *Red Lion*, that it is not (merely) the "scarcity of broadcast frequencies" (in the literal physical sense and not merely the usual economic sense) that rationalized the content-powers of the FCC, but that that rationalization takes into account "the Government's role (i.e., original choice of rationing mechanisms) in allocating those frequencies." Effectively, it accepts the metaphor of a given frequency as though it were a very valuable, but extraordinarily narrow street through which only one person may pass at any time. To the extent that persons may want to be the one to be given exclusive passage-rights, they must agree in advance to certain conditions. In the case we are discussing, the condition is not to serve as a common carrier but rather to restrict what they might themselves otherwise wish to say (as they make their way through the passage), to say some things they would not otherwise wish to say, and so forth.

Currently, and prospectively, it may well be the case that the total number of "narrow streets" available for passage is already very great. In respect to certain developments, such as coaxial cable television, moreover, the situation may already be at the point where there appears to be no justification in imposing "speech burdens" on anyone because the cable's capacity is such that there is always at least one unused narrow street available to anyone who cares to claim it. For this reason, among others, serious first amendment questions have already arisen in respect to FCC authority to carry over into cable television the full complement of doctrines it continues to impose upon standard VHF television.

But, at the constitutional level (as distinct from the policy and statutory level), the outcome is truly not clear. It may remain feasible to argue that even if there are thousands of such "unused streets," they are not uniformly as valuable as those in use. Addressees may not tune into them as often and may not have the equipment at home to receive all of them uniformly well. Conceptually, then, with government owning the airwaves, with some being more valuable than others, and with some people forbidden to use a given frequency during its period of licensing to a particular party, it will remain feasible to argue that a large range of FCC, program-content rules may still be sustained by the Supreme Court. I have attempted to address this question at greater length in Van Alstyne, "The Mobius Strip of the First Amendment: Perspectives on *Red Lion*," 29 S. [Car. L. Rev.] 539 (1970).

When this form of communication was new and untried, it was not surprising that Congress dealt with the subject as it did. My own review of the history of the Radio Act and the Federal Communications Act indicates that there were a number of considerations that accounted for the original arrangement. Among the considerations were these:

1. Uncertainty respecting the nature of the electromagnetic spectrum, i.e., its capacity for communicative uses, its divisibility, etc.;
2. An initial impression that for some time, at least, the probable usable frequencies in various receiving areas would be few in number, i.e., that there would be a literal scarcity;
3. Industry self-interest, i.e., the interest of companies first into the broadcast business, seeking governmental assistance to secure their investment and frequencies against signal-interference from others;
4. Congressional anxiety, i.e., a definite fear by members of Congress that particular broadcasters in particular areas would have remarkable broadcast influence likely to affect their own incumbencies (§ 315 of the Act, for instance, is part of the original act and has existed quite apart from all of the FCC's own program-content rules from the beginning);
5. A general anxiety about the uncertain power of broadcasting as a form of communication, i.e., its qualitative impact uniqueness. Respectfully, I believe that time and technology have overtaken the first two considerations and that they no longer (if ever they did) justify the maintenance of extensive program-content regulations of the FCC. Similarly, radio and television are not every bit as familiar and as ordinary as newspapers had become by the 18th century; the consideration of alleged "qualitative impact" per se, in light of everyone's ready access to an immense diversity of informational sources, is no sufficient reason at all to impose more severe content-restrictions than are addressed to concentrated, influential print media. Industry self-interest, so far as it may operate anti-competitively, i.e., to support rules whose content-regulations are discouraging to more diverse or more controversial or more specialized programming, is in this respect a wholly inappropriate consideration. The capacity of the new technologies, and the remarkable selection of specialized services soon to be available at quite economical cost to millions of consumers, moreover, will make FCC insistence regarding conventional program-content regula-

tion of ordinary radio broadcasting appear archaic and inexplicable—and very possibly unconstitutional as well.

5. *Have government regulations contributed to spectrum scarcity (e.g., regulations limiting the number of VHF signals in a local area)?*

As this Committee is doubtless aware, the answer is "yes." A considerable fraction of available frequencies on the usable electromagnetic spectrum are withdrawn from possible licensing. The frequencies thus withdrawn are, in large areas, excessive to the number necessary to reserve to specialized uses. More disturbing, it appears to be the case that the FCC occasionally declines to make available readily usable channels simply because of an alleged economic detrimental impact upon existing licensees—and that some courts deem the agency required to limit licensees on the questionable reasoning that insofar as an adverse competitive effect may remove some kinds of programs some listeners strongly prefer, the protection of that licensee's economic viability is identified as part of "the public interest" which the FCC must consider as a reason to limit competition. The rationale is borrowed, of course, from the tendency of other regulatory agencies such as the ICC. It has, however, an especial irony as applied here, beyond any conventional anti-trust justification. In terms of first amendment considerations, there is a manifest boot-straping quality to this policy:

(a) Because there are insufficient usable frequencies for all who want them, it is therefore necessary and proper to impose affirmative program-content duties on the small number awarded them; but

(b) Because the capacity of the few who have them to observe the affirmative program-content duties required of them might be compromised if others were allowed to compete with them, the FCC must disallow others to acquire a usable frequency of their own.

This is an extreme departure from any version of the scarcity rationale. In essence, it stands the proposition on its head. Originally, the power to direct and to restrict program content arose because of scarcity and despite the first amendment. In this version, the power to maintain scarcity is itself asserted in order to preserve control over program content (by maintaining the economic viability of incumbent broadcasters). My own view is that such a rationale flies in the face of the first amendment.

Limitations on my own time have made it impossible to develop an adequate response to all of this Committee's important questions. But I hope what has been presented here may be useful to your work, and I am grateful for your interest.

The CHAIRMAN. Thank you very much.

We are recessed.

[Whereupon, at 11:35 a.m., the committee was adjourned, to reconvene upon the call of the Chair.]

FREEDOM OF EXPRESSION

FRIDAY, NOVEMBER 19, 1982

U.S. SENATE,
COMMITTEE ON COMMERCE, SCIENCE, AND TRANSPORTATION,
New York, N.Y.,

The Committee met, pursuant to notice, at 10 a.m., room 305C, Jacob K. Javits Federal Building, New York, N.Y., Hon. Bob Packwood (chairman of the committee) presiding.

OPENING STATEMENT BY THE CHAIRMAN

The CHAIRMAN. The hearing will please come to order.

This is the third in a series of hearings that the Senate Commerce Committee has held on the subject of freedom of expression in this country, specifically as it relates to the electronic news media.

I will state my position very baldly at the start. I think that the liberties and privileges now enjoyed by the print press—the protections of the first amendment—should be extended to all methods of communication in the country, be they electronic, print, or whatever else the future may bring.

Because there is a great sensitivity to tinkering with the first amendment, I want to make it clear that I am not talking about amending that Amendment. There are justifiable fears that any effort to amend it might unduly weaken it and, therefore, any suggested amendment that will come forth—and none is drafted now—will be a separate, additional amendment that will in no way demean or limit or endanger the first amendment and its present protections.

On the first day of these hearings, we heard from scientific witnesses, including the executive vice president of Bell Labs, Solomon J. Buchsbaum. We tried to determine whether or not the scarcity rationale retained any validity. By that I mean the rationale that says because there are not enough radio frequencies and television frequencies available, it is the obligation of the Federal Government not only to license users of these frequencies but to regulate what these licensees may say or do.

The witnesses on the first day of hearings demolished the concept of scarcity. One question that I posed to these witnesses was taken from the statement of Prof. Ithiel de Sola Pool of the Massachusetts Institute of Technology. He had stated that you could take one UHF television channel, reassign it for radio use, and create up to 200 new radio stations in any given area.

When I posed that question to the scientific witnesses, they said, if you mean stations of the technical quality that we now have, you

might not create 200, but you could easily create 80 to 100 additional radio stations in any given market, with the surrender of just one UHF television frequency.

When I posed the question to them about how you could support an additional 80 to 100 stations in any given market, they said that was not the question I asked. The market might not support an additional 80 to 100 radio stations, but technically you could have them.

And as far as television is concerned, with the coming of the direct broadcast satellites, with the low power television stations, with cable, the day of scarcity is over. As a matter of fact, cable is not scarce today. Cable does not enter the home using a broadcast, over the air signal. So to the extent that New York City or Washington wants to franchise two or three or four cable companies, each of which have the capacity to deliver anywhere from 20 to 40 to 60 channels, they can do it. The cities may choose to limit it to one franchise on the basis of the monopoly concept, the same principle that applies to our utilities, but there is no reason why they could not franchise more. So with cable, there is no scarcity in the technical sense at all.

After we had gone through the first day of hearings and the scientific witnesses had pretty much proven that there was no scarcity, we then had constitutional scholars testify on the second day. They addressed what the outcome might be as print and electronic technologies merge. The newspapers will never again be what they were before, when their papers rolled off the presses with no communication by electronics and no reliance on any kind of electronic sending or receiving of signals. Those days are gone.

Indeed, the day when print and electronic technologies merge is coming closer and closer in two respects. First, the print media are buying electronic properties, especially cable. Second, with new services like teletext and videotext, the methods of gathering and distributing information will merge. We can now receive in our homes some news from print sources on video screens—and we will receive more in the future.

The academics said that we will soon face one of two alternatives. Either the Supreme Court will one day have to recognize that our founders would have intended that electronic journalism, had they been able to envision it, be included within the first amendment, and the Court will reverse all of its past decisions and extend that protection. Otherwise, the Court will have to say that we can no longer treat print and electronic differently—because they are no longer different and henceforth the rules that apply to electronic journalism will apply to print journalism.

But the academics were very clear in saying that the law can no longer rationally make the distinctions that were made 40 or 50 years ago.

In today's hearing we will go on to two different subjects. One is a look at the present rules for electronic journalism—the fairness doctrine, the equal time requirements, the access regulations—how do these rules impinge on editorial decisions? How do they affect the editorial judgments of those who cover the news on television or radio? What decisions must they make? What stories do they possibly not cover that they would otherwise cover, but for the fear

of the hand of the Federal Communication Commission and, subsequently, the courts? Testifying on these issues will be Mr. Dan Rather of CBS, and Mr. Bill Monroe of NBC.

Then we will conclude with three witnesses who will address themselves directly to facts about of the cost of media properties—radio, television, and newspapers. The argument is frequently made that, oh, well, anyone can start a newspaper—all you have to have is a mimeograph and roll them out—but not everyone can start a radio or television station.

I have asked these three witnesses, who are the three best experts we could find, to tell us realistically what it costs to start a newspaper or buy one, and what it costs to start a radio or television station or buy one, so that we might have some practical idea from a financial standpoint—not just from a scientific standpoint—which is the scarcer resource—electronic or print.

With that, I would like to call on our first witness today, who is Mr. Dan Rather, correspondent for CBS News. Mr. Rather, we're delighted to have you with us this morning.

STATEMENT OF DAN I. RATHER, CORRESPONDENT, CBS NEWS DIVISION

Mr. RATHER. I am grateful for the opportunity to appear here today because there is no issue that I feel more strongly about than the one we are now considering. That is the assurance of the full protection of the first amendment to the electronic press. Although my strong feelings on this subject stem partly from the fact that I am now primarily a broadcast journalist, they go beyond these professional concerns.

I would like to emphasize that I am here as an individual, as a citizen. I am not here to engage in a special pleading on behalf of myself nor my colleagues in broadcast journalism. And I certainly do not mean to tell you that we, any more than our colleagues in the print press, are infallible in our efforts to bring the public news fairly and accurately, or that those efforts should not be subject to criticism and scrutiny both by the public and by other journalists.

But I am here to say as strongly as I know how that any Government role in overseeing the journalistic decisions of broadcasters is fundamentally at odds with the concept of a free press.

Perhaps we reporters say too often that the first amendment guarantee of a free press is not intended to confer special privileges on us, but rather to protect the rights of the public we serve. But if that statement has become a cliché—I hope it has not, but if it has, it is because it expresses a basic truth.

The framers of the first amendment understood the necessity of divorcing the power to govern from the right and responsibility to inform the people about the affairs of Government. They would never have dreamed of establishing a Government agency as the judge of the "fairness" of the very newspapers which were meant to act as a check against the abuses of Government power.

And that was not because they always liked what they saw in the newspapers of their day. Thomas Jefferson, for example, deplored "the malignity, the vulgarity, and the mendacious spirit" of the press of his time, but he considered these to be "evils for which

there is no remedy. "Our liberty depends on the freedom of the press," Jefferson wrote, "and that cannot be limited without being lost."

I would like to think that the spirit that characterizes the press of today—both print and broadcast—is far different from that of the newspapers of Jefferson's era, as he saw that spirit. I have 20 years of experience with the commitment to fairness and accuracy which motivates my colleagues at CBS News, and I am very proud of that commitment. But the fundamental point remains the same: All our basic liberties depend for their survival on freedom of the press—not freedom so long as the ruling majority thinks the press is right, but freedom from all Government restraint.

It is ironic, therefore, that as we approach the 200th anniversary of the Bill of Rights, the medium on which the public most relies for its news and information must still answer to a Government agency empowered to decide on the fairness, balance, and responsibility of its reporting on public events.

We are fortunate that those charged with the regulation of broadcasting have been, by and large, civilized and sensitive men and women who have attempted to perform their function with due regard for first amendment values. But the security of our freedoms cannot be allowed to depend on good fortune alone.

Let us be clear about what Government power to regulate broadcast content means. It is a power exercised most prominently through the fairness doctrine and the so-called equal time law. It means that a politically appointed body—the Federal Communications Commission—is continually called upon to decide whether broadcasters have been fair and balanced in their coverage of the most highly charged issues of the day.

While that is bad enough in itself, it is made even worse by the fact that television and radio stations must regularly apply to the Government for the right to remain on the air. So, if the FCC determines that a particular station has not met Government-approved standards of fairness, that station can be permanently silenced by the Government.

How would we feel if this situation were to exist with respect to our daily newspapers? I think we would find it intolerable, even if the possibility of such draconian Government were confined solely to the realm of theory. Unfortunately, however, history teaches us that Government efforts to intimidate the press are not always just the stuff of which nightmares are made.

To any future administration intent on bending the broadcast media to its will, not only the fairness doctrine, but the entire licensing process, could serve as a subtle but powerful instrument of Government coercion. And the prospect of such Government coercion is made all the more frightening because it is most likely to occur during times of national trauma, when the need for a free and uninhibited press is most critical.

There is, therefore, a very real tension between the entire concept of Government licensing and a broadcast press which is truly independent. We need not dwell on this, however, to conclude that the most direct kinds of regulation of broadcast content—such as the fairness doctrine and equal time provision—should have no

place in a society that is rightfully proud of having the freest press in the world.

Journalists should not have to justify what they publish, to even the most well-intentioned Government. Nor should the presentation of a controversial report result in their being required to cull through newsroom files to prove to a Government bureaucracy that the "other side" has also been presented. Such Government scrutiny, it seems to me, is fundamentally incompatible with the robust and independent press which the first amendment was designed to foster.

I can assure you, Senator, that all this has a definite, if subtle, impact on the real world of broadcast journalism. When I was a young reporter, I worked briefly for wire services, small radio stations and newspapers, and I finally settled into a job at a large radio station owned by the Houston Chronicle. Almost immediately on starting work in that station's newsroom, I became aware of a concern which I had previously barely known existed—the FCC.

The journalists at the Chronicle did not worry about it; those at the radio station did. Not only the station manager but newspeople as well were very much aware of this Government presence looking over their shoulders. I can recall newsroom conversations about what the FCC implications of broadcasting a particular report would be. Once a newsperson has to stop and consider what a Government agency will think of something he or she wants to put on the air, an invaluable element of freedom has been lost.

At CBS, when the claim is made that our coverage of a complex issue has not been "balanced," when someone goes to the FCC and demands equal time, the problem is largely handled by management and lawyers. But such complaints often involve extensive litigation before the Commission and the courts, costing many thousands of dollars—sometimes hundreds of thousands of dollars—and absorbing hours of management time and effort.

How will the small broadcaster, without the economic resources of a CBS, react to the threat of such costly and time-consuming legal proceedings? Will there not be a temptation to steer clear of controversy, so as to avoid these burdens?

It is bad enough that broadcasters are subject to such inhibitions. But recent technological advances lend compelling new urgency to the task of extending full first amendment protection to the electronic media. As you pointed out, we are rapidly approaching the day when newspapers, books, and magazines, will be available in many homes on the television screen. While it may seem inconceivable that such technological change would lead to the imposition of content controls on traditional print journalism, the only sure way to prevent this is by making clear that the first amendment means what it says—for the electronic as well as the printed press.

Indeed, the very technological change which makes it more vital than ever that electronic journalism achieve full first amendment citizenship, at the same time undermines the traditional rationale for regulating broadcast content. Whatever arguments might have been made in the past about the scarcity of broadcast frequencies, there are now more than 10,000 television and radio stations in the United States, almost six times the number of daily newspapers. In addition, such emerging technologies as cable television, direct sat-

ellite-to-home broadcasting, and subscription TV, promise to increase enormously the diversity of viewing choices available to the public.

But the public does not depend on television and radio alone for news and commentary on public affairs. It also receives information from books, magazines, and newspapers, not to mention the countless other institutions in this pluralistic society—educational, civic, religious, and professional—which play an essential role in shaping public awareness and opinion.

With all these competing sources, it strikes me as not a little fantastic to argue that Government regulation is needed to keep broadcast journalism honest. In the final analysis, it is the pluralism of our society which provides us our surest defense against the abuse of freedom of the press.

As I noted at the outset, none of us in the print or broadcast press can claim that we always achieve perfect accuracy, fairness, and balance in our reporting. On those occasions when we do fall short, we expect to be called to account for our errors by the public and by our peers, just as newspapers and magazines are. But this process of criticism and review is one in which the Government can have no proper role, for the dangers inherent in such Government intervention are far greater than those posed by occasional journalistic excess.

CBS News, I want to emphasize again, is committed to accuracy and fairness in news reporting and will remain so, whether or not there is a fairness doctrine or an equal time law. Our ultimate judges, of course, will be the millions of people who watch and listen to our news broadcasts every day. I do not believe they would fail to recognize bias or distortion for very long, and my experience bears that out.

Once again, the words of Thomas Jefferson are instructive.

As yet we have found it better to trust the public judgment, rather than the magistrate, with the discrimination between truth and falsehood. And hitherto the public judgment has performed that office with wonderful correctness.

Insuring the full protection of the first amendment to the electronic press would constitute a renewed vote of confidence in the intelligence and judgment of the American public and a renewed commitment to the first amendment faith of our Founding Fathers. That vote and that renewed commitment are long overdue, and I hope they will come soon.

The CHAIRMAN. Mr. Rather, thank you.

As you were testifying, I was thinking of two or three anomalies that we have seen over the past years involving regulation. One is a recent one—the *Simon Geller* case—arising out of Gloucester, Mass. As I recall the facts, Mr. Geller operates a daylight station, almost a one-man operation, and he plays classical music all day long. He does not have Accuweather and he does not have any news and he does not have traffic reports, and he had no complaints from any of the citizens of Gloucester.

However, at his license renewal time he was faced with a competing applicant who said they would put on news and what not. Lo and behold, the FCC took Geller's license away, indicating that he was not properly serving the Gloucester community—this de-

spite the fact that Gloucester gets 40 other radio stations. The listeners in Gloucester were not denied the weather reports or the news.

I believe that kind of thinking certainly does not lead to diversity. You are going to have 40 clones and they will all have Accuweather and they will all have sports reports and they will all have traffic reports, and you will get a humdrum consistency, with little variety. That is one example.

The next was a West Virginia case where the local radio station was afraid to comment on a strip mining matter because they were not quite sure what the fairness implications would be if they commented or reported on this matter. So they simply did not report it at all one way or the other, and someone objected to that. The case went to the FCC and the FCC said they had to report it. Therefore, they reported it, and then they were subject to fairness complaints. You talk about a "Catch-22" situation, where you cannot win in either direction.

But the case that struck me the most—and I do not know why the print journalists do not fully grasp its significance—was a case involving a candidate named Tornillo in Florida. This is a fact situation now over 10 years old. Florida had an "equal space" statute requiring that if the newspapers commented on a candidate and that candidate objected, the candidate could demand equal space for a reply. This, of course, is almost identical to our equal time doctrine as far as candidates are concerned and it is akin to the fairness doctrine.

Well, the Miami Herald attacked Tornillo, and he demanded equal space. The Herald would not give it to him. It went to the Florida Supreme Court, and the Florida Supreme Court upheld the statute. They contended—now bear in mind this case is almost 10 years old—that the Miami Herald and, indeed, all of print journalism was so intertwined with electronic communications that they could not separate themselves from it. As far as the supreme court in that State was concerned, the same kinds of rules that are applied to electronics henceforth should govern the print media. And it was a unanimous decision.

The case went to the U.S. Supreme Court and it was reversed—the U.S. Supreme Court cited the first amendment. They never mentioned the leading case involving electronic journalism—the so-called *Red Lion* case—and to this day scholars say you cannot rationalize the distinctions between *Red Lion* and the *Miami Herald* cases. The court can indeed make a fiat decision, but scholars say you cannot intellectually square these two decisions based upon what the fact situations were.

So the danger is there, and the danger is that print is going to be subject to what you as a broadcast journalist are already subject to. It will not be quite licensing of print, because I cannot conceive of the Supreme Court sustaining such licensing, but certainly there may be regulation of content and of editorial judgment.

I am curious. You used the word "trauma" in your statement. You said that this coercion "is most likely to occur during times of national trauma." Could you elaborate on that?

Mr. RATHER. Senator, I think the record is fairly clear, for example—and this is only one example—that the press was under con-

siderable attack by the administration during the Watergate era and the press was also under considerable political pressure during the Vietnam war, pressure not only from the Republican and Democratic administrations. But I do not think we have to chronicle those incidents that occurred then or at other points in our history to appreciate the dangers that exist here.

The point is that as long as we have the current system of regulation, the potential for abuse is going to be there, whether it manifests itself as it did during the Watergate era or during the Vietnam war period. The regulation of a politically appointed agency is something that every journalist feels at one time or another over his shoulder if he is working in broadcast journalism.

As long as a politically appointed agency has the power to put broadcasters out of business, we are going to have to live with the possibility that some future administration will try to exploit that. I said in my statement I think it is too risky to rely on our good luck that such a situation will not arise, and that is why I think it is essential to assure the electronic press the complete independence from Government to which the press as a whole is insured, in my judgment, under the first amendment.

The CHAIRMAN. Let me ask you this in terms of making editorial judgments. A story breaks and you must make a decision as to whether or not you want to put it on the news that night, and you realize there may be some potential for fairness doctrine complications.

You probably think twice about it, but do you consult with lawyers or with higher management at that stage and say, ladies and gentlemen, what do you think? Should we go with this or not? From your standpoint, what kind of ramifications are there for the entire company?

Mr. RATHER. Frankly, I do not do that. But I work at CBS News. We do not do that. We make a judgment is this a story for us, and in general, this is a vast oversimplification, but what we do is we run it and then we let the management and the lawyers worry about it.

But again I emphasize that at CBS News, rightly or wrongly, we consider ourselves an institution with a past, with a tradition, with resources and experience that local station newsrooms simply do not have—perhaps I should say by and large they do not have. So the reality for me at CBS News is quite a bit different than the reality that I know and experienced at local stations.

The answer to your question is no. We do not do that at CBS News, but at local radio and television stations it happens on a day-in and day-out basis. Many times the local station news director simply does not know where the boundaries are. He does not have any idea. He has been there a short period of time, in some cases. He does not know what the station management's view is. He does not know who the lawyers are for the station. And the temptation is very large to say, well, what do we do about this. Do we run it or don't we run it?

Now that is the reality when you work in a local station newsroom. There are exceptions to that, of course, but that is what we are dealing with on a day-to-day basis, far less at the networks—a

place like CBS News—than in local station newsrooms and small chain news rooms.

The CHAIRMAN. I think I have visited all of the local radio stations in Oregon many times and my initial observation is that no one is getting rich running small radio stations in relatively small towns. They work pretty hard at it. Normally, the owner is involved in the running of it, and questions must go through that owner's mind from time to time: If indeed I air this and if indeed the FCC complains, it is going to cost me \$5,000 or \$10,000, and I simply cannot afford it.

Mr. RATHER. Well, there is that. It is also he just does not want the trouble. I do not underplay that at all. And increasingly the appearance of lawyers in newsrooms and even having to think about lawyers in newsrooms—when I first started in this business—in fact, for a very long time, until recently—no journalist that I knew, nor did I, very often thought of lawyers at all. Now, one is forced to think of lawyers fairly often. One reason is that it has become so expensive just to defend yourself. Even if you have a very good case, the cost of defending yourself can be enormous. We are talking about the cost in dollars.

Now for that local station operator in Oregon or Texas or where have you, it is not just a case of dollars. It is a case of he may get trouble in the community. Someone may not know the details, but they will say, well, somebody has attacked you under the fairness doctrine. Well, yes, we are fair. We try to be fair in our newsroom.

Those conversations go on, but the temptation—and this is the point—the temptation is to say, look, I am not looking for trouble. I do not want any trouble and to signal the newsroom—if indeed not to say to the newsroom—do not handle anything that is hot. Zoning ordinances come to mind. I have some experience with that.

Somebody said, look, you want to do a documentary on zoning ordinances. Why do you want to do a documentary on zoning ordinances? I said, well, it is fairly important. Yeah, but a lot of people feel strongly about that; why don't you do something about the Salvation Army.

These are real conversations, and that is the danger to say far less of a CBS News than it is in a local station newsroom, and these dangers are real.

The CHAIRMAN. Let me ask you a further issue that has presented itself and you can tell me if it is a valid concern.

I am getting more and more complaints from local radio stations and, to some extent, local television stations, about having to provide free time to groups that are on the other side of issues where proponents have bought time.

The situation will arise where the proponents of an issue buy some time on radio or television. The opponents will spend their money on direct mail or newspaper advertising and then complain that they have no money to go on radio and television. They then use the fairness doctrine to demand response time. By and large, they get it. The stations will have to give it to them for nothing.

Mr. RATHER. Well, of course, this is a fairly common complaint among those of us who work in broadcast journalism. I do not mean this case specifically, but the whole business of having to provide equal time.

Journalistically, if you stop and think about it, it is a very good example of why the Government should not be in the business of regulating a journalistic enterprise, that the print press is free to use its journalistic judgment—underscore “journalistic judgment” in presenting whatever debates between major candidates or in-depth coverage of their position it thinks will help inform the public. That is a judgment made by the editors of a newspaper.

Now the kinds of cases that you are describing, what comes into play is this hovering, the possibility of Government interference and what it creates, again, it creates the mood and atmosphere, a texture of operating that says do not give anybody any time because you may really catch it.

Now for us where it really comes into play is in Presidential elections. As we all know, there are dozens of fringe candidates in a Presidential election, and it can make it nearly impossible to come to grips with saying, look, let's have a debate between the major candidates in this election. That can be impossible to do because you have these equal time divisions.

The CHAIRMAN. Where I have seen this specifically is in Presidential debates. Clearly the networks and the League of Women Voters and the candidates have managed to get around it by staging them as news events. When broadcasters cover them as news events, you are generally free of equal time problems.

Where I see the problems in the local candidate debates, when the local candidates fair may not be a sufficient news event. The stations might be willing to actually give a half an hour or an hour of time for a debate between the principal candidates, but they won't if three or four minor candidates who are not significant or not serious are going to have to come on in addition.

In that case, because publicly staged candidate fairs are not a news event of sufficient magnitude, and because the stations cannot have only the two major candidates, there is no coverage at all of those debates.

Mr. RATHER. There is no question about it. I have been in these situations at both local radio and television stations, in which before the campaign or during the campaign we have a discussion and say, look, let's set aside a half hour of really good prime time—and prime time is different in radio than it is in television, a different time of day, but they have their prime time.

And the station manager will say, well, you know, what can you do in a half hour, because, you know, you have got these six or seven fringe candidates. In the first place, people are going to tune us off if you have only the two major or three major candidates—or maybe even four—but can we really handle 12 or 15 major candidates in a half hour. The answer is no.

So what happens, again, is the momentum is there to take the safe way and say, well, we would love to do it, but let's just don't set aside that time. Let's just not do it. And increasingly, when you travel around the country, there was a time not too long ago when stations would set aside prime time of their own in the evening. Radio would set aside time. Now it is rare that they do that, and one reason it is rare is because of the so-called equal time provision. They just cannot afford to do it.

The CHAIRMAN. I saw this happen—it was not this election, but 2 years ago—where a station refused to do it because they were faced with the threat of a demand from a write-in candidate, and the station said it was not worth it. There were major contestants in each party. The write-in candidate was not going to do well, could not do well, and was not a significant factor, but the station would not run the risk of having just the two major candidates.

Mr. RATHER. I do not think we can emphasize too much that this is a difference between those who work on the broadcast newsroom and those who work at a newspaper. It is a difference that should not exist.

Ideally, the editor in a broadcast newsroom should be able to make his judgments the same way a person on a newspaper does, and that is that if he wants to run on the front page—the newspaper man wants to run on the front page the debate—put “debate” in quotation marks, if you will—between the two major candidates or three major candidates, he can do so, and put everybody else, if he chooses to do so, on page 5 or 6.

In broadcasting, you cannot do that. I fully understand the argument and the concern of people who say well, it is a little bit different in broadcasting. My answer is yes, it is a little bit different, but it should not be.

The CHAIRMAN. Well, the argument is that it is a little bit different, but we must remember that in most areas now you have just one newspaper. If you are talking about scarcity and monopoly—and I do not mean that in an evil sense, just that economics have forced us to that point—it is the newspaper that is the scarce commodity, not the broadcast property.

In this town the New York Times has those debates before their board of editors and they invite, normally, the two major candidates. If they think there is a viable third one, they invite him. And they exclude the ones who are not viable. They give it very prominent coverage and those that are left out are left out. Fortunately, the Government cannot do anything about it.

Mr. RATHER. True.

The CHAIRMAN. Mr. Rather, I have no other questions. I appreciate very much your taking the time to come here today.

Mr. RATHER. Thank you very much, sir.

The CHAIRMAN. We will now hear from Mr. Bill Monroe of NBC News. He is the moderator and executive producer of “Meet the Press.”

Mr. Monroe, we are delighted to have you with us.

STATEMENT OF BILL MONROE, MODERATOR AND EXECUTIVE PRODUCER, MEET THE PRESS, NBC NEWS

Mr. MONROE. Thank you, Mr. Chairman.

I very much appreciate your invitation to be here. I agree with Dan Rather about the central importance of the subject. I am glad to be able to participate in the hearings. Like Dan, I am speaking as an individual.

I have provided a statement for the record and I would like to read a fraction of it. The statement itself is much too long. The fraction might turn out to be too long.

The CHAIRMAN. We will put all the statements in the record. I have read your entire statement. It is one of the most extraordinarily able statements I have run across on this subject, from academics or anyone else.

Mr. MONROE. Thank you.

Because my statement is printed in a type that is smaller than the cue cards I use on Meet the Press, I am going to resort to granny glasses.

The United States began the 20th Century with a free press. It is approaching the end of that century with one-third of the press free, two-thirds of it regulated by Government, and an apparently growing acceptance of the idea that Government guidance is superior to freedom of the press in providing a diverse, satisfying news service to the public.

The printed press, which is cited by one-third of Americans as their primary source of news, remains free under the stout shield of the first amendment. But the electronic or broadcast press, which is the primary supplier of news to two-thirds of our people, is subject to compliance with Government-imposed rules for the treatment of issues and the coverage of politics. It must answer to a Washington bureaucracy in complex and often costly Government proceedings and court cases over interpretation of these rules.

We have drifted, it seems to me, into this situation first by historical accident and, later, by inertia. It started out because in the early decades of this century broadcasting did not look like an extension of the traditional American press, either in technology or in function. The early radio stations, for example, did not even cover the news. They ripped news off of wire service machines.

As a journalistic medium, television was not much more impressive in its early days than radio was, but news gradually, over a period of years, began expanding into half-hour news reports, even full hour news periods, and later evening news reports. The Today show, daringly at that time, ventured into breakfast time with 2 full hours of news and information. The expansion into longer news periods and untried time slots, into all-news stations and all-news cable programs continues to this moment.

During political conventions, election nights, space launchings, and such periods of national trauma—it is interesting that Dan and I should use that same phrase—as the assassination and funeral of President Kennedy, television soon discovered it could devote its own front page, the evening hours, fully to news.

Today the names of Murrow, Huntley and Brinkley, Cronkite, Chancellor, and others—I should include Rather in that list—drive home the existence of the electronic media as American press of the very first rank. But still there is obstinate resistance to according radio and television a clear first amendment status. I think one basis for this resistance is a persistent elitist tendency among opinion leaders—professional, managerial, intellectual—to dismiss television as vulgar in its dependence on a mass audience and fatally contaminated by its show business ancestry.

The centrality of television's press function to the American democracy today is not self-evident to civic, cultural and business leaders who, in fact, for the most part continue themselves to rely

on newspapers for most of their own current information. However explainable these attitudes are, if the present general acceptance of Government-regulated media is not challenged, the first amendment will inexorably waste away to absolutely nothing.

It will be repealed, not by any deliberate process of Government, but by a slow undermining process on two levels—technological and philosophical. Technological repeal is taking place in that the electronic media, requiring channel allocation, are perceived as not quite press. We define these media on the basis of irrelevant technology, not on the all-important basis of function.

Today the printed press itself, I think, is ominously endangered by the erosion of its constitutional protection, not only because newspapers are moving in the direction of electronic distribution but also because our present toleration of media regulation as applied to electronic media challenges head-on the whole philosophy of press freedom inherent in the first amendment.

The first amendment says that the most essential condition for the American press in our system of checks and balances is independence from the Government. It does not guarantee a perfect press or a fair press or even a responsible press. It guarantees only an independent press, a press untouchable by Government. "The Congress shall make no law abridging freedom of speech or of the press." It protects the citizenry by setting up free and diverse sources of information—a competitive flow of ideas, facts and argument.

If we accept the idea which, in fact, we have already put into practice, the idea that Government guidance can improve electronic media, then obviously it can improve printed media as well. Under these circumstances, the philosophical bedrock under the first amendment is going or gone, and the newspaper monopolies of this country at some crisis point in the future will find themselves friendless in their efforts to maintain an independence which in terms of both American practice and American opinion no longer has a leg to stand on.

There are many examples of the political manipulation of the regulatory process. One occurred during the Carter-Reagan campaign of 1980. This involved the so-called "reasonable access" provision of the Communications Act. The Carter-Mondale Committee applied to the networks to buy political time—I think this was in December 1979. Each network declined on the basis that it was too early in the political season to schedule campaign broadcasts. We had not at that point even gotten into the primary season.

The Carter-Mondale Committee appealed to the Federal Communications Commission, which ruled in the committee's favor. The favorable vote was cast by the four Democrats on the Commission, with the three Republicans all voting no. In effect, a decision that should have been made by journalists was made by Presidential appointees acting as political partisans.

There are understandable inhibitions, by the way, that prevent the public from learning of many instances in which Government regulation has intimidated broadcasters. Nobody wants to admit to being intimidated. Nobody wants to admit to trimming his sails to stay out of trouble with the bureaucracy.

I once asked five radio station executives whether they had ever allowed themselves to be intimidated by Government regulation. All five immediately replied no. I then asked them whether they had ever paused in the making of a journalistic decision to consider whether it might get them in trouble with the Government. All five of them immediately said yes.

Of course, if the FCC rules against you on a fairness complaint, you can go to court, but even if you win, you lose. NBC's successful defense of itself in the famous *Pensions* case cost something like \$100,000.

A Spokane television station, hit by what seemed to it to be an unreasonable fairness complaint, was angry enough to fight it and eventually got it thrown out, but not until it had spent \$20,000 and an estimated 480 supervisory man-hours defending itself. If I remember all the facts in that case, this \$20,000 was a significant factor in the overall profits of that station for that particular year.

The fairness doctrine inculcates a code of play-it-safe journalism. Fred Freed, a producer of notable documentaries for NBC, once said, "If you do something controversial, you know you will spend months defending yourself to the Government. That's not conducive to doing something controversial."

The tendency of broadcast executives and lawyers to play it safe certainly is not modified by the aura of confusion and unpredictability about the whole process. A case in point involves former Democratic Party Chairman Larry O'Brien. After President Nixon had made five prime time speeches, primarily about Vietnam, CBS provided O'Brien half an hour of reply time. In response to that, much to the astonishment of the Democrats, the Republicans asked for time to answer O'Brien.

O'Brien, they said, had not stuck to the issue of Vietnam. The FCC bought the Republican argument and ordered CBS to give the GOP time to answer O'Brien's answer to Nixon. It turned out eventually to be another case in which a court overturned the Commission.

It is interesting to me that if you pick up any decent American newspaper, you will find in it a range of informed, hard-hitting opinion, some of it coming from national columnists. And alongside their essays there is usually a rich diet of local opinion, columns, editorials, and special op-ed pages. Where is the counterpart of all this intellectual salt and pepper on local and national television news programs? It almost does not exist.

The local television station, for example, that offers a daily personal opinion of any kind is rare. Television editorials tend to inveigh heavily against potholes and shoplifting and for the United Fund.

Pick up any American newspaper and alongside its array of journalistic opinion you will find an array of popular opinion in the letters column, where readers can take the newspaper to task and, if they want to do so, rage against city hall and the State legislature. Networks and local stations have, here and there, dabbled somewhat halfheartedly in audience response programs. But as a living, breathing daily institution commensurate with what is in newspapers, television just does not have a letters-to-the-editor section.

Why is television, which does so remarkable a job covering the news, so deficient, so sterile, so pallid, so bland in its handling or nonhandling of opinion? Because, in my opinion, it is a Government-regulated medium, because regulation sets up an atmosphere in which it is prudent not to invite controversy, and the avoidance of opinion of any kind is one way to steer clear of controversy.

It seems clear to me that many station owners and their managers, though they might not wish to admit it, feel that their commercial lives depend on minimizing controversy. Broadcasters do not feel free to follow their own consciences as journalists because they have to answer to a bureaucratic conscience, with its close-packed pages of rules, regulations, and precedents. So the electronic media, by contrast with what the first amendment intended, are stifled and stunted.

As to how we should go about assuring genuine first amendment status to broadcasting, I am not entirely sure, Mr. Chairman. A new constitutional amendment applying to the electronic media would certainly accomplish the purpose. If Congress does not act, it is my hope that the Supreme Court will one day recover from its present myopia toward the electronic media and undo its early decisions consigning them to second-class citizenship.

In the meantime, I note that groups which should be interested in this issue are not much concerned about it—newspaper editors, lawyers and judges, intellectuals, often broadcasters themselves. Until such groups become interested, we may not see public opinion develop toward the necessary general support for freeing the electronic media.

But I agree with you, Mr. Chairman, it is a fact that the steady, year-by-year erosion of the first amendment is becoming increasingly visible. It is a fact that the present proliferation of electronic media has nullified the common argument that their scarcity precludes full freedom for them.

Your own interest in the matter, along with that of others, suggests to me that we are not going to just let press freedom waste away, that we are going to face the issue and make a conscious decision to rebuild the first amendment by extending it to all media. That is the only way, it seems to me, to preserve that signal American guarantee of free and independent sources of news not beholden to Government.

The CHAIRMAN. Mr. Monroe, let me ask you about the attitude of newspapers and others toward what I think they should perceive as a danger to themselves.

At the time this country was founded, there were only eight daily newspapers in the whole country. The Constitutional Convention was, by and large, made up of a few political leaders and businessmen. It was not made up of journalists, yet when there were only eight daily papers they regarded freedom of the press as so critical that they elevated it to where the Government could never ever touch it.

Why is that same concern not evident now, not only among business leaders but among print journalists themselves? You have been in both sides of it. Why the lack of concern among the print journalists for this issue?

Mr. MONROE. I think for a number of reasons, Mr. Chairman. One, I think most print journalists are subject to the same biases that affect lawyers and doctors and professionals and affluent people and the highly educated—the general tendency to look down on television as some kind of vaudeville and circus, which is reflected by the frequent comments you hear, proudly said, that “I never watch television,” “I do not turn on the boob tube,” or “I won’t have it in my house”. So television is looked on as fairly disreputable.

But in the case of newspaper people there is a competitive bias as well. They feel that television has come along to challenge them, and indeed it has. It is a matter of distress to most television journalists to have newspapers disappearing as they have been, because most of us, frankly, get most of our news from newspapers. There is more news in newspapers than we have on television. You have to watch television an awful long time to get that much news.

But newspaper people have seen television come along, challenge newspapers for supremacy in distribution of information to the citizens of this country. In the early days of television and radio it was true that journalists in these media were not as well trained as newspaper journalists. They frequently came to press conferences and asked amateurish questions which did not help their standing in the eyes of newspaper people.

Today there is some tendency to make fun of them and to downgrade the television medium on the basis of the fact that anchor people are so handsome looking, there is so much attention paid to hairdo and cosmetics in television—all of which is completely irrelevant to the journalistic function that we are serving.

I think that newspaper people need to wake up about this. Some years ago, over a period of about 2 years, there were two conferences dealing with a subject similar to this. I was interested that FCC Commissioner Kenneth Cox, a Democratic liberal and a fine, upstanding public servant, was talking in one of these conferences about newspapers being on the verge of going into electronic distribution.

I was in the audience at that conference and I asked him from the floor whether if that happened he would wish to apply the same kind of regulation now applied to broadcasting to newspapers. His answer was, after a moment of thought, no. A year or a year and a half later, at a similar meeting, the same subject came up. Mr. Cox was on the podium and I asked him the same question. His answer was yes.

After thinking on it over a period of a year or two, he decided that there was no way to prevent the kind of regulation that affects broadcasting from being extended to newspapers if they are distributed the same way that television and radio are.

The CHAIRMAN. Well, his answer has a certain logical consistency to it. There is no way that you can intellectually treat one way and one the other.

Mr. MONROE. We are setting up an intellectual schizophrenia which is going to break down eventually in favor of one side or the other.

The CHAIRMAN. Let me read you a statement—and this came from an earlier hearing. I was asking the witness from a group called Accuracy in Media some questions. This is one.

Senator PACKWOOD. If print moves more and more into the electronic era, if they transmit more and more of their information electronically, you are saying they should be subject to the fairness doctrine?

Mr. HEMENWAY. That is right.

Then I went through a series of questions based on the assumption that the Washington Post sends out an editorial via satellite and NBC sends one out via satellite. The present rules are that you are subject to response obligations and the Washington Post is not. Given that situation, I asked him:

But to the extent the courts say yes, Katherine Graham, yes to the Washington Post, you are now in the position of broadcasting when you do that and, therefore, you are subject to fairness, to equal time, and to all of the other restrictions that are put on what we currently call broadcasters.

Mr. HEMENWAY. That would be healthy to the democratic process in this republic.

There are people who think that way. The thing that bothers me is that I often find the attitude among the print media and the broadcasters, that if we could just get the current FCC to relax the fairness doctrine and the equal time rule, we would be safe. Well, that's fine with the current FCC. Who knows what the next FCC is going to be, or the next Congress?

Mr. MONROE. American media should not be subject to a statutory imposition of a fairness doctrine. If you repeal the current fairness doctrine, you would still be subject to statutory reimposition of it at a later date any time you got a majority in the Congress that was het up for some reason about the media.

The CHAIRMAN. Well, both you and Mr. Rather mentioned national trauma, and that is the time when it is likely to happen. I suppose one of the worst examples we have seen in this country was the internment of the native-born Americans of Japanese ancestry during World War II—these were native-born Americans.

By and large, the media supported it. The Congress supported it. Finally, the Supreme Court, on a 5-to-4 vote, supported it because they, too, got swept away.

Mr. MONROE. I think if we get into some future crisis involving something like war or terrible economic distress or any matter that affects our national self-confidence so that we are beginning to argue with each other and be bitter within the country, we are subject to some kind of attack on the media for which we will have not the barrier to protect us that we ought to have under present regulation of electronic media, and the present weakening, I think, of attitudes toward the newspapers, as indicated by the startling Florida case you mentioned—the *Tornillo* case.

The CHAIRMAN. Of course, the thing that always intrigues me with that case is that all print journalists who are concerned with this issue are familiar with the U.S. Supreme Court decision. They are totally unfamiliar with the unanimous decision in the Florida Supreme Court finding that the newspapers were so involved with electronics that they should be subject to the kinds of doctrines which are applied to broadcasting.

Mr. MONROE. I found that decision unbelievable, particularly the unanimity of it.

The CHAIRMAN. Let me ask you something about the Carter-Mondale case. Frankly, I was intrigued when their request to buy time was turned down.

You have covered politics long enough to know, and I have been in it long enough to know, that the 1984 Presidential campaign is now in session. There is no question that half a dozen Democrats are running and if, by chance, President Reagan does not run, half a dozen Republicans are going to be running. It would seem to me that candidates ought to be able to buy time on television now because the campaign is now going on.

And yet the networks, all three of them, turned down that Carter-Mondale request because they said that it was too early. The campaign had not yet started.

Mr. MONROE. Actually, Mr. Chairman, I do not think the candidates admit that the campaign is going on right now.

The CHAIRMAN. Let me put it this way. It will not be very long before some of them will formally admit it. They may have the decency to wait until New Year's.

But clearly they will be in it. They will file, raise money, announce candidacies. But even at that stage, I take it, assuming you had no restrictions, the networks would not change their decision that the John Glenns or the Gary Harts or the Alan Cranstons could not buy time on NBC, CBS, or ABC next summer.

I am curious about why not. What is your rationale for saying the campaign has not started?

Mr. MONROE. Well, in December of 1979, when the Carter-Mondale committee—they applied earlier than that, but they wanted time in December 1979. The whole primary system had not begun yet and President Carter apparently wanted to announce at that point, I think he did, his own decision to run for the Presidency, make his formal announcement.

The feeling was that in cities around the country, in the Nation at large, we have not had any pattern of political speeches beginning in rallies around the country, let alone on national television or local television, 11 months before an election. I do not think there was any precedent for a major speech, locally or nationally, to be delivered that long ahead of election time.

I have to say one other thing here too. It is hard to figure out what a network or local station would do about such a request if they were free to do whatever they want. The present system makes them defensive in their actions. They try to avoid getting into what looks like a can of worms.

They might actually be more generous. I think in some cases there is no doubt they would be more generous and easy going to making decisions on the basis of what seemed reasonable as opposed to the trouble they might be into going down this road.

The CHAIRMAN. On that you are perfectly right. If you sell Carter-Mondale time, you must sell time to anybody else, assuming they have the money. It is not that you have to give it to them, but you have to make it available. Under the law you have to sell it to them, of course, at the lowest possible rate and you may have to start juggling your commercial sponsors or eliminating them in order to get everybody on.

Certainly it would be more true at a local level. It is certainly more true if you have five or six serious candidates in August or September of next year looking at primaries in New Hampshire and Iowa. At that stage, who knows who is viable and who is not. There may be half a dozen who are.

Mr. MONROE. I think the FCC in the Carter-Mondale case said that a decision on when the campaign begins should be up to the candidates. They should be able to declare that a campaign has begun and the networks and local stations then are vulnerable to any kind of request for time, which seemed a little bit harsh to the networks and also opened up questions of when does a campaign begin. Does it begin anytime a candidate says it begins?

The questions and doubts and uncertainties and confusion are just endless in these cases.

The CHAIRMAN. Let me ask you a further question about the NCPAC kind of ads, because some stations would not run them this year. Clearly it was a station-by-station decision. And yet I have had very few complaints that newspapers would not run similar kinds of ads, maybe an occasional case. This is much more true of television. Why is that?

Mr. MONROE. My own feeling is that stations and networks ought to run ads of this kind unless they feel—I do not know how much right they have to make their own evaluations, as a matter of fact—unless they feel that the ads are outrageous, are libelous or factually totally off the beam. We have an obligation to allow access on controversial matters and on political matters.

Again, in the case of the NCPAC ads or the case of any controversial ads affecting politics or other matters, you have to work defensively in broadcasting. You look at all the rules and try to avoid further trouble down the road. If you were free to make decisions the way a newspaper can, it would be easier to run the NCPAC ads than it would be under the current regulatory process.

The CHAIRMAN. This is not quite true with NCPAC because they are candidate-oriented political ads, but you now have the situation when someone takes out paid ads and then a station may have to give away time to another side which says we no longer have any money because we have spent it on ads in other media.

Mr. MONROE. If you take one ad of this kind, you do not know what you are getting into next, what you might be compelled to do. If you take such an ad as a newspaper, you are not sure who might bring you another ad, but you do not embroil yourself with a Government agency at the same time.

The CHAIRMAN. Very valid answer.

Mr. Monroe, I have no more questions. Let me again congratulate you on your entire statement. It was a masterpiece.

Mr. MONROE. Thank you, sir.

[The statement follows:]

STATEMENT OF BILL MONROE, NBC NEWS, MODERATOR AND EXECUTIVE PRODUCER OF MEET THE PRESS

The United States began the twentieth century with a free press. It is approaching the end of that century with one third of the press free, two thirds of its regulated by government, and an apparently growing acceptance of the idea that government guidance is superior to freedom of the press in providing a diverse and satisfying news service to the public.

The printed press, which is cited by one third of Americans as their primary source of news, remains free under the stout shield of the First Amendment. But the electronic, or broadcast, press, which is the primary supplier of news to two thirds of our people, is subject to compliance with government imposed rules for the treatment of issues and the coverage of politics. It must answer to a Washington bureaucracy in complex, and often costly government proceedings and court cases over interpretation of those rules. The broadcaster cannot escape awareness that a federal commission, appointed by the President, holds the ultimate power to terminate his license and put him out of business.

We have drifted, first by accident and later by inertia, into this situation where, for the first time in American history, the people are receiving the bulk of their information from sources not independent of government influence. Obviously, it is a situation which the First Amendment was expressly designed to prevent.

In the early decades of this century broadcasting did not look like an extension of the traditional American press either in technology or in function. It was not something palpable and enduring to be held in the hands and read and, sometimes, to be filed away and re-read. And, whereas the front page of the newspaper featured news almost exclusively, the "prime time" of the new media featured entertainment almost exclusively.

The early radio stations didn't even cover the news. They ripped news off of wire service machines, news that for the most part came from newspapers. Announcers and disc jockeys read it on the air. In 1947 I became the first journalist ever to work for a New Orleans radio station. It was hard to make any connection between this wobbly, upstart new medium and so majestic a concept as freedom of the press.

There was also the necessity of assigning frequency locations to individual radio stations and, later, television stations. With these infant media not looking like the press we were accustomed to, and indeed not looking initially very important in the scheme of things, the government naturally took on the role of channel assignment and then moved, somewhat uneasily to be sure, into evaluation of program content as a rationale for decisions between competing applicants.

As a journalistic medium, television was not much more impressive than radio in its early days. Typically, the local television station had a 15-minute early evening newscast followed by a 15-minute network newscast, perhaps John Cameron Swayze with the Camel News Caravan. Then news gradually began expanding into half-hour news periods, even full hour news periods, and late evening news reports. The Today show, daringly, ventured into breakfast time with two full hours of news and information. The expansion into longer news periods and untried time slots, into all-news stations and all-news cable programs, continues to this moment.

During political conventions, election nights, space launchings, television soon discovered it could devote its own front page, the evening hours, to news. On November 23, 1963, the morning after the assassination of President Kennedy, I was at my desk as Washington bureau chief for NBC News when I got a phone call from New York that startled me: word that for the next day or so, until the Kennedy funeral was over, we would provide continuous live news coverage. Not only would entertainment programs be swept off the air but the coverage would not be interrupted by a single commercial. I wasn't sure we could manage that long a stint of continuous coverage. But we did.

Today the names of Murrow, Huntley and Brinkley, Cronkite, Chancellor and others drive home the existence of the electronic media as American press of the first rank. But still there is obstinate resistance to according radio and television clear and complete First Amendment status.

One basis for this resistance, I think, is a persistent elitist tendency among opinion leaders—professional, managerial, intellectual—to dismiss television as vulgar in its dependence on a mass audience and fatally contaminated by its show business ancestry. The centrality of television's press function to the American democracy of today is not self evident to civic, cultural and business leaders who, in fact, for the most part continue themselves to rely on newspapers for most of their own current information.

There is also a generation gap at work on attitudes toward television. It is notable, for example, that on the longstanding issue of equal access for television to coverage of courtrooms, the younger lawyers and judges are much more amenable than the older to admission of cameras, and the opening of courtrooms to electronic coverage, which was going nowhere 20 years ago, is now gaining ground year by year.

But, however explainable these attitudes are, if the present general acceptance of government-regulated media is not challenged, the First Amendment will, inexorably, waste away to nothing. It will be repealed, not by any deliberate process of gov-

ernment, but by a slow undermining process on two levels: technological and philosophical. Indeed, the repeal process has already gone a long way on both levels.

Technological repeal is taking place in that the electronic media, requiring channel allocation, are perceived as not-quite-press. We define these media on the basis of irrelevant technology not on the all-important basis of function. Thus, the flow of two thirds of American news is already contaminated by government policymaking in areas that used to be the clear prerogative of journalists.

People who favor permanent relegation of the electronic media to second-class status under the First Amendment like to argue that there is something in the technology, something in the frequency allocation problem, that compels government interference. It is a totally empty argument. There are many possible ways to accomplish frequency allocation while placing a hard barrier in the way of government intrusion into editorial decisions or program content. All we have to do is start out with a consensus, based on function, that American electronic media are American press, that they can, and must, be free under the First Amendment, and we will find ourselves free to choose the method of accomplishing that deeply conservative purpose, which is nothing less than preservation of a meaningful First Amendment.

As it is, the printed press itself is ominously endangered by the erosion of its constitutional protection—not only because newspapers are moving in the direction of electronic distribution but also because our present toleration of media regulation, as applied to electronic media, challenges head-on the whole philosophy of press freedom inherent in the First Amendment.

Channel allocation is a mere excuse for the present regulation of broadcasting. The actual philosophy behind it, which is sometimes plainly stated by its proponents and sometimes only implied, is that government guidance *improves* American news media, provides more fairness and balance, for example, than would otherwise be the case. It is a straight-on anti-First Amendment argument. The First Amendment says that the most essential condition for the American press in our system of checks and balances is independence from the government. It does not guarantee a perfect press or a fair press or even a responsible press. It guarantees only an independent press, a press untouchable by government: "The Congress shall make no law . . . abridging freedom, or of the press." It protects the citizenry by setting up free and diverse sources of information—a competitive flow of ideas, facts and argument.

But the very existence of government rules fastened on two thirds of the American news flow increasingly argues that the First Amendment is out of date. It tells us that modern America not only accords a secondary value to independent journalism but is, in fact, willing deliberately to place journalism under government oversight and set up government standards of fairness and balance in the hope of obtaining more dependable reporting. If we accept this idea which, in fact, we have already put into practice, the idea that government guidance can improve electronic media, then obviously, it can improve printed media as well. Under these circumstances, the philosophical bedrock under the First Amendment is going or gone. And the newspaper monopolies of this country, at some crisis point in the future, will find themselves friendless in their efforts to maintain an independence which, in terms of both American practice and American opinion, no longer has legs to stand on.

At this point, however, it is my hope and belief that we have not drifted so far into the practice and philosophy of press regulation that we can't catch ourselves and undertake the restoration of full freedom to all American media before it is too late. Because we have gotten where we are by drift, without much public awareness or discussion, that process should be reversible by a newly rising awareness of danger now becoming apparent and by a process of national debate, if those who are concerned can get it going. I am encouraged in that regard by the new attention being paid to this subject in recent years by you, Mr. Chairman, and by others of your colleagues, including, Senator William Proxmire and former Senator Eugene McCarthy.

If we follow through on this national debate, I am convinced that political and intellectual leaders and a majority of the American people will gradually turn against the idea of captive media responsible to a government agency. I believe they will come to see the kind of regulation we have not only as wrong in principle and destructive of the First Amendment but as inhibitory and unworkable on the practical level, and destructive of the kind of journalistic vigor essential to the health of our democracy. Regulation has not improved electronic journalism. It has held it back, stultified it, made it wary and defensive in its effort to live by government rules.

For example, the "equal time rule" has come closer to serving the political interests of presidential candidates than the public interest. Until recently, the candidates used it to hide behind if they did not want to debate.

The rule says that broadcasters, unlike newspapers, cannot hold debates among major presidential candidates without inviting all the obscure candidates that may be on the ballot in one state or another. Its practical effect has been to make it impossible for broadcasters to arrange such debates for the benefit of voters.

But in 1960, Senator John F. Kennedy and Vice President Richard M. Nixon, neither an incumbent president at that time, decided they wanted to debate. So they passed discreet signals to their adherents in the Congress, Congress waived the rule for that year, and the networks, because the candidates were willing, could stage three history-making presidential campaign debates.

But in subsequent presidential contests—Johnson-Goldwater (1964), Humphrey-Nixon (1968), Nixon-McGovern (1972), one or both candidates didn't want a debate. The Congress, accordingly, declined to waive the rule and the public was deprived of the kind of campaign debates they had watched in huge numbers in 1960. Here was a regulation purportedly to protect the public interest being manipulated cynically to promote or protect the campaign interests of political candidates.

To round out the story, in more recent elections the Federal Communications Commission has set up a loophole that permits evasion of the "equal time" rule by a transparent stratagem. The League of Women voters invites the major candidates to debate. When the candidates have agreed to a time, place and format, the networks discover, under the rules of this subterfuge, that a news event is about to take place and they arrange to "cover" it. As everyone knows, of course, including the candidates, the League, the networks, the Congress, the FCC and the public, the League is setting up a debate expressly for network distribution to the nation because broadcasters, unlike newspapers and wire services, are not allowed to do it themselves. The New York Times can, and does, arrange its own debates without the complicating services of middle men or women. But broadcasters have to go through a hypocritical, cumbersome, three-cornered process to accomplish the same result.

There are many examples of the political manipulation of the regulatory process. One occurred during the Carter-Reagan campaign of 1980. This involved the so-called "reasonable access" provision of the Communications Act. The Carter-Mondale committee applied to the networks to buy political time. Each network declined on the basis that it was too early in the political season to schedule campaign broadcasts. The Carter-Mondale committee appealed to the Federal Communications Commission, which ruled in the committee's favor. The favorable vote was cast by the four Democrats on the commission, with the three Republicans all voting no. In effect, a decision that should have been made by journalists was made by presidential appointees acting as political partisans.

A newsman who once worked in a highly reputable television news organization in a middle-sized city told me of an incident involving a powerful United States senator. In a hot local controversy, involving water control and dam projects, he was under fire as a supporter of large dams, which critics said did more harm than good. The senator insisted vehemently that his critics were mistaken, that he had vigorously worked for small dams. The local station news editor asked a reporter to check on the senator's record. It turned out he had voted consistently for big dam projects and only rarely for small dams. When the station aired the story in a newscast, the senator was indignant. Without challenging the accuracy of a single fact in the story, he made a strong argument to the station manager that the account had put him in a bad light and was not indicative of his basic attitude.

The station wound up giving the senator ten minutes of free time in which he was able to bolster his position by a combination of selected facts and personal charm. It should be noted that there was no specific compulsion, under law or regulation, for the station to have supplied such a gift of time. But the television editor who related the incident felt that, in the general climate of broadcast regulation and the uneasiness broadcasters feel about their dependence on a Washington bureaucracy, the station management just didn't want to incur the long-range hostility of their own senator, a man of national standing. The station did not offer any other parties in the controversy time to reply to the senator. The station's newsroom wound up feeling embarrassed and somewhat chastened. They had aired a legitimate, factual story. But the station then acted, in response to the senator's anger, as if the story had been unfair or distorted. It had taken an action that had about it an aura of apology.

I have not, of course, identified the newsman acquaintance who related this incident or the station involved. He asked me not to. Although he is no longer working at the station, he did not wish to embarrass his former employer.

This understandable and honorable inhibition underlines the problem of getting at specifics of instances in which government regulation has intimidated broadcasters. Nobody wants to admit to being intimidated. Nobody wants to admit to trimming his sails to stay out of trouble with the bureaucracy. I once asked five radio station executives whether they had ever allowed themselves to be intimidated by government regulation. They all said no. I then asked them whether they had ever paused, in the making of a journalistic decision, to consider whether it might get them in trouble with the government. They all said yes.

There is also a Catch 22 at work in this area that militates effectively against candor. The FCC has said, on at least one occasion, that broadcasters are not supposed to make journalistic decisions with the intention of avoiding difficulties with the commission. If any broadcaster did that, said the FCC, he or she would be regarded unfavorably. Thus, broadcasters are under regulatory rules to which they feel they have no choice but to react defensively, and at the same time they are on notice not to admit it in public. So there is a bureaucratic inhibition, on top of a natural inhibition, against confessions of intimidation. And one result of this is that rank-and-file journalists—correspondents, reporters, editors and producers—often don't know when their own news organizations have made decisions yielding to anxiety about the regulatory process. The executives above them avoid their own embarrassment and possible trouble with the FCC by not telling them.

The fairness doctrine, like the equal time concept, produces, under the fine banner of the public interest, abuses of the public interest. A former communications lawyer, Steven Simmons, wrote a book on the subject a few years ago: "The Fairness Doctrine and the Media," published by the University of California Press. He began his research personally in basic accord with the idea of government overseeing media. But by the time he got through interviewing judges, lawyers, bureaucrats and journalists, and looking through court decisions and regulatory pronouncements, he concluded it was an area of endless bureaucratic-legal confusion and frustration in which nothing was clear and predictable. He described this bureaucratic dogma as an "unfairness doctrine"—unfair to the public because it did not expand coverage of public issues, unfair to broadcasters because it interferes with editorial judgments and inhibits controversial broadcasting, and open to abuse by presidents, political parties and special interests.

In fairness to former and present FCC commissioners, some of whom I know, I should note an observation of Simmons with which I agree. It is that there is nothing venal or sinister about the commissioners as people. Most of them are highly dedicated and entirely favorable to the abstract concept of press freedom. But they are asked to do an impossible job: to reconcile regulation of program content with the abstract principle of press freedom. The result, inevitably, is confusion, frustration, decisions and reversals, tortured language, unpredictability.

The famous Pensions case is a good example. I didn't happen to have any personal involvement in the preparation of the NBC documentary, narrated by Edwin Newman, which focused on abuses in the private pension system. Like any other viewer, I watched it at home on television. I found myself profoundly moved by the agony of several old men who were interviewed, men who felt bitter and cheated. Some of them wept as they told of the disappearance of pensions they had been led to believe would be there when they turned 65. Expecting dignified retirements, they were suddenly struggling with poverty and dependence. When it was over, I felt angry—and proud of NBC News for producing a powerful and compelling program.

So I was startled when Accuracy in Media subsequently complained to the FCC that although NBC was deliberately targeting several pension plans that were fraudulent, the program should have included balancing material, to make it clear that all pension plans were not fraudulent, that most were all right. The FCC proceeded to declare the program in violation of those U.S. government rules of fairness which would have astonished Thomas Jefferson.

NBC could then have gotten off the hook at that point by afflicting innocent viewers of the Today show with a bewildering five-minute interview on pension plans that work just fine. Instead, to its credit, the network went to court to uphold the principle that it had a right to target abuses without wasting time in defending the general system in which they occurred. Eventually, the courts reversed the FCC. But it had cost NBC \$100,000 to make the point.

Simmons made this comment on the case in his book: Unfortunately, the fairness doctrine, held constitutional by the Supreme Court, inevitably leads to unhealthy Commission intervention in broadcast journalism and healthy yet tortured court decision, such as Pensions, to rectify the First Amendment balance.

The fairness doctrine metes out harassment to big and little broadcasters alike. A Spokane television station, hit by what seemed to be an unreasonable fairness complaint, was, like NBC, angry enough to fight it—and eventually got it thrown out. But not until it had spent \$20,000 and an estimated 480 supervisory man hours defending itself.

The fairness doctrine inculcates a code of play-it-safe, don't rock-the-boat journalism to stay out of trouble with the FCC. Tackle tough issues and you court trouble with the government. Avoid controversy and there will be no obstacles to license renewal. Fred Freed, a producer of outstanding documentaries for NBC, once said, "If you do something controversial, you know you will spend months defending yourself to the government. That's not conducive to doing something controversial."

If a station presents a documentary on a subject that arouses emotions, it risks stirring up complaints to the FCC from one group or another. If the FCC gets indignant letters challenging the fairness of the program, it will write to the station manager and direct him to defend the program's compatibility with government rules. The station manager then goes through a long, meticulous process of consultation with the program producer, the news director, local attorneys, Washington attorneys. For the next week or ten days he cancels some of the appointments on his schedule to see the process through. Finally, a careful, detailed document is sent to the FCC justifying the program.

In most cases, the FCC writes back indicating its acceptance of the station's position. But what happens the next time that documentary producer seeks to do a program on another controversial issue? Would it, or would it not, be human for the station manager to steer the producer toward a safe subject, one less likely to stir complaints? Would it, or would it not, be human for him to want to avoid, any time soon, another hassle with the FCC?

The tendency of broadcast executives and lawyers to play it safe is certainly not modified by the aura of confusion and unpredictability about the whole process. A case in point involves former Democratic party chairman Larry O'Brien. After President Nixon had made five prime-time speeches, primarily about Vietnam, CBS provided O'Brien half an hour of reply time. In response to that, much to the astonishment of the Democrats, the Republicans asked for time to answer O'Brien. O'Brien, they said, had not stuck to the issue of Vietnam. The FCC bought the Republican argument and ordered CBS to give the GOP time to answer O'Brien's answer to Nixon. It turned out, eventually, to be another case in which a court overturned the commission.

After working as a journalist for a wire service and local newspapers, for a radio station, for a television station and 21 years for NBC News, I continue to be struck by a broad and vital area in which broadcasting remains relatively bland and timid compared with its print brethren—the area of opinion journalism: editorials and commentary.

Pick up any decent American newspaper and you'll find a range of informed, hard-hitting opinion. Some of it comes from the national columnists: Evans and Novak, Joseph Kraft, Anthony Lewis, William Safire, Tom Wicker, James J. Kilpatrick, Mary McGrory, and others. They add a tremendous flavor of vigor and vitality to editorial and op-ed pages. And alongside their essays there is usually a rich diet of local opinion: columns, editorials and special op-ed pieces.

Where is the counterpart of all this intellectual salt and pepper on local and national television news programs? It almost doesn't exist. In contrast to this daily newspaper diversity, the networks offer occasional generally guarded comments by John Chancellor and Bill Moyers. Chancellor and Moyers, to be sure, are intellectual and journalistic equals of the print columnists but their total output is tiny indeed compared to the varied spectrum of their newspaper brethren. The local station that offers daily personal opinion of any kind is rare. Television editorials tend to inveigh heavily against potholes and shoplifting and for the United Fund.

Pick up any American newspaper and alongside its array of journalistic opinion you'll find an array of popular opinion in the letters column where readers can take the newspaper to task and, if they want to, rage at city hall and the state legislature. Networks and local stations have, here and there, dabbled half-heartedly in audience response programs with occasional phone-in productions and scattered letters-to-managers hours stuck away in odd time spots. But, as a living, breathing, daily institution, television just doesn't have a letter-to-the-editor section. With most newspapers, you can complain about the city editor's news judgment and the political reporter's interpretation of the election campaign, and you can get your complaint printed where it's visible to the same audience they have. With television, for all practical purposes, you're frozen out of answering back before the same audience.

Why is television, which does so remarkable a job in news presentation, so deficient, so sterile, so pallid, so bland in its handling, or non-handling, of opinion? Because in my opinion, it is a government regulated medium, because regulation sets up an atmosphere in which it is prudent not to invite controversy, and the avoidance of opinion of any kind is one way to stay clear of controversy.

Outsiders don't understand, and often don't believe, the existence of this inhibitory cloud. Many insiders don't understand it and some of them deny it. Skeptics will tell you that so few station licenses are taken away it is not rational for station owners to fear the possibility. Maybe it's not rational. But the regulatory apparatus is real, the rules are confusing, the lawyers must be consulted, the proper papers must be carefully drawn up and submitted in triplicate, occasionally a station does lose its license on the vote of a bureaucratic body, and there's no way station executives, who possess every bit as much integrity as newspaper publishers and editors, can relish challenging a process which can, conceivably, strip them of their livelihoods.

People who have worked exclusively in broadcasting, many of them, do not themselves understand the difference between genuine press freedom, with its clear boundaries marked by the First Amendment, and the kind of limbo in which they operate with its boundaries ever shifting according to the changing attitudes of Congress, the courts and the FCC. All they know is that you can make a profit in broadcasting, you can make some satisfying contributions to the public weal, you can cover the news and you can venture a strong, outspoken editorial occasionally—with accent on occasionally—without stirring up too much trouble. In general, they obey the unwritten rule against plain talk and blunt opinion on any kind of regular basis. And they consider themselves functioning in comfortable enough freedom, which, by comparison with the Soviet Union and Argentina, perhaps they are. First Amendment freedom it is not.

When I made the transition from associate editor of a daily newspaper to news director of a television station in the same city, I could feel the atmosphere of a different, inferior, less comfortable order of freedom in broadcasting. I once suggested to my television bosses that the station broadcast an editorial criticizing the Chairman of the FCC. They agreed readily with the basic idea but immediately said that, first, we would have to consult legal counsel. Not once, in some years of writing editorials for a newspaper, had I heard an editor or publisher suggest that, before criticizing a government official, we had better check with a lawyer.

Broadcast news has gradually, one by one, assumed all of the special functions of print news. Beginning with the general and the obvious—news, sports and weather—it has moved into the same specializations as newspapers: business correspondents, experts on the law, science reporters. But, arriving at the realm of journalistic opinion, it has stopped on the threshold, unwilling to develop the same free, robust clash of opinions traditional to newspapers. So, in an average American city, we have a monopoly newspaper providing news and all sorts of opinion and we have four or five competitive television stations providing news but, with a few wan exceptions, avoiding opinion as if their lives depended on it.

That may be exactly the way station owners and managers feel, though they might not admit to it: that their commercial lives, in fact, depend on minimizing controversy and the embroilment with the FCC which it entails. Broadcasters don't feel free to follow their consciences as journalists because they have to answer to a bureaucratic conscience with its close-packed pages of rules, regulations and precedents. So the electronic media, by contrast with what the First Amendment intended, are stifled and stunted. In a sort of unacknowledged collusion with government, they have already accustomed us to a public policy that allows news on our television screens but not the panoply of opinion that gives such character to newspapers.

I'm not suggesting that, if full First Amendment freedom were suddenly bestowed on broadcasting, a journalistic millenium would be upon us. I am suggesting that broadcasting is now a relatively bland and timid medium by comparison with print. I believe that difference is due to the stultifying effects of government regulation. If that regulation disappeared, television would simply acquire the same relative boldness, the same freedom to bring us a robust mix of opinion, for example, that newspapers now have. Television networks and stations would not, despite the fears of some, go charging off in all directions, espousing wild causes and wallowing in political bias. Like the newspapers, if freed from unhealthy government pressure, they would still respond to the constraining imperatives of mass media—the need to please a wide audience of diverse views, the pressure to maximize audience size, the need to attract advertisers. America is now enjoying some of the finest newspapers the world has ever seen. There is no reason why television, free of government restriction, should settle on any lower journalistic standards than those guiding the

print media. And there is one reason to expect even higher standards: the electronic media are disciplined more by competition than are the print media. With First Amendment protection, television would simply become more lively and more interesting, more effective in acquainting the American people not only with current events but with the kaleidoscope of current thinking. And, more important, in the event of some future national crisis, if the government tried to pressure news media to angle the news in its favor, the electronic media would have the same independence as print of withstand the pressure.

As to how we should go about assuring genuine First Amendment status to broadcasting, I am just not sure. A new constitutional amendment applying to the electronic media would certainly accomplish the purpose. But I am skeptical that we can expect the Congress to take such an initiative. My perception is that too many congressmen and senators feel comfortable with, and perhaps see some advantage in, their ability to manipulate and pressure media that are answerable to government. I may be underestimating, however, their willingness, when confronted with the issue, to act on principle and take the historic action of restoring clearcut American freedom to the new media. If Congress does not act, it is my hope that the Supreme Court will one day recover from its present myopia toward the electronic media and undo its early decisions consigning them to second-class citizenship. In the meantime, I note that groups who should be interested in this issue are not much concerned about it: newspaper editors, lawyers and judges, intellectuals, broadcasters themselves. Until such groups become interested, we may not see public opinion develop toward the necessary general support for freeing electronic media.

But it is a fact that the steady year-by-year erosion of the First Amendment is becoming increasingly visible. It is a fact that the present proliferation of electronic media has nullified the common argument that their scarcity precluded full freedom for them. And your own interest in the matter, Mr. Chairman, along with that of others, suggests that we are not going to just let press freedom waste away, that we are going to face the issue and make a conscious decision to rebuild the First Amendment by extending it to all media. That is the only way to preserve that signal American guarantee of free and independent sources of news, a press not beholden to government.

The CHAIRMAN. Thank you for coming.

Next we will move on to the witnesses who are experts in the costs and the availability of broadcast properties and print properties. These witnesses can shed some light on the argument that anybody can start a newspaper, but not everyone can start a radio station.

Our first witness is Mr. John Morton of Lynch, Jones & Ryan, Washington, D.C.

Mr. Morton.

STATEMENT OF JOHN E. MORTON, LYNCH, JONES & RYAN

Mr. MORTON. Thanks for inviting me, Mr. Chairman.

What I am going to talk about today is, as a practical matter, daily newspapers are a scarce commodity in our society, with severe limitations on the creation of new newspapers or in the acquisition of existing ones.

The press critic, A. J. Liebling, said some 20 years ago that freedom of the press is guaranteed to the man who owns one. That observation pointed up then, and still does, the fact that achieving ownership of a general interest daily newspaper is an extraordinarily expensive undertaking, limited to wealthy corporations or the exceptionally wealthy individual. For that reason, almost all newspaper acquisitions that have taken place in recent decades have involved large companies taking over small ones.

Nor is starting up a new daily newspaper from scratch easy to do. The list of large-circulation daily newspapers successfully established since World War II is not just short. It does not even exist.

Entrepreneurs attempted to establish competing daily newspapers in Atlanta in 1964, in Sarasota in 1963, in Phoenix in 1962 and again in 1965. These efforts failed for lack of advertising support. Cowles Communications started a daily in 1967 on Long Island to compete in Suffolk County with Newsday. They had to shut down after 3 years and some \$10 million in losses for the same reason.

An investment group tried to start a daily in New York in 1978 called the Trib. It closed after 3 months and losses of \$5 million. Quebecor, which is a large Canadian publishing company, started the Philadelphia Journal in 1977 and had to close it last year after accumulating losses of \$15 million.

It is true that the Unification Church has started two newspapers in metropolitan markets—the Times in Washington and the News World in New York—but neither of these is financially successful. Both are underwritten by the church. Moreover, the very nature of their ownership at least raises questions about their role as independent editorial voices.

More recently, Gannett—the largest newspaper company in the country—launched the national daily newspaper, USA Today, at a cost that I estimate may reach \$50 or \$60 million. Whether this will be a successful venture remains to be seen. In any event, it is not considered by the newspaper industry or by Gannett as the sort of newspaper that fills the role of a local general interest daily newspaper.

In looking at smaller markets, generally the only daily newspapers that have been created have grown out of previously weekly operations. The markets simply grew enough in size eventually to warrant daily publication. There have been some rare exceptions to this. In the midsixties, Gannett recognized that the Nation's huge investment in the space program would cause a population explosion on Cape Canaveral in Florida, creating a market for a daily newspaper where none had existed before. Thus, the Cocoa, Fla., Today newspaper was launched and grew with the market.

The basic reason for the failure to establish new daily newspapers in existing markets is that the economics of newspapering strongly suggest that no new daily publication can successfully start up in a market that is already being well served by an existing daily newspaper. The economies of scale and advertisers' devotion to paying the lowest cost per thousand readers in buying advertising favor the existing larger newspaper to such an extent that the new publication can never hope to prosper.

Indeed, these same factors have very nearly eliminated daily newspaper competition in those few remaining markets where two metropolitan dailies have existed for decades.

Even assuming it were practical to start up a new daily newspaper, the cost would be prohibitively high for most potential investors. To establish a daily newspaper with a circulation of 250,000, complete with full production equipment and press line, would require an investment reaching perhaps \$40 million. To establish a newspaper with one-fourth that much circulation would cost \$15 to \$20 million. Even a very small newspaper, with a circulation of 20,000, would require more than \$5 million if it was to have its own publishing plant.

To buy an existing daily newspaper also requires an investment prohibitively high for most. A recent study I conducted of sales of profitable daily newspapers in the last 4 years in which information was made public showed that the average price paid per subscriber was \$582.

One of the ways that the cost of acquiring properties is measured as something called the price-earnings ratio. Put simply, that just means it is a statement of how many dollars an acquirer is willing to pay for \$1 of money earned after tax by the company that they acquire. In other words, if a company earned \$1 and you paid \$32 for each one of those dollars they earned, that is the price-earnings ratio.

During this 4-year period of newspaper acquisitions, on the average acquiring companies paid \$32 for each \$1 of after-tax income on the papers that they acquired. During the same period, buyers of stocks in companies that make up the Standard & Poor 500 were willing to pay about \$8 for each \$1 of after-tax income of the companies in the index.

These acquisitions covered newspapers of all circulation sizes and involved a rather wide range of multiples of circulation—in other words, the amount they paid per subscriber. Last May, for example, Gannett paid \$110 million to acquire the dailies in Jackson and Hattiesburg, Miss., with a total circulation of 129,000. That price equals \$852 per subscriber.

Dow Jones last April gave stock worth \$16.9 million to acquire the Santa Cruz, Calif., Sentinel, a daily newspaper of 26,800 circulation. The price is equal to \$631 per subscriber. In 1980, Times Mirror paid \$95 million for the Denver Post, or \$349 per subscriber.

Although the information has not been made public, through my consulting work I am aware that many other newspaper acquisitions, some of them chiefly in the growing Sun Belt markets, have commanded prices of more than \$1,000 per subscriber.

The point of these observations is that while in our society anyone with the will and money is free to start a daily newspaper, as a practical matter it does not happen in our established cities. Nor is it possible for anyone except very large companies or exceptionally wealthy individuals to acquire existing daily newspapers.

The CHAIRMAN. Mr. Morton, you cited a few examples where companies with wealth attempted to start daily newspapers in major areas and failed.

Mr. MORTON. Yes, sir.

The CHAIRMAN. In your judgment, why would they fail? These were experienced people who knew what kind of business they were getting into. What went wrong?

Mr. MORTON. What basically went wrong is that they were trying to refute what has become an axiom of the newspaper industry, which is that you cannot successfully establish a competitor where one already exists. The reasons for that are chiefly economic. There are economies of scale.

It takes just about as much money to publish the first issue of the existing daily newspaper as it does to publish the first issue of the new newspaper. In other words, the costs of production are about the same, yet the larger paper is able to spread its produc-

tion costs over a much broader circulation, so there are great economies of scale in that. That is one thing.

The other is that advertisers have become very devoted to paying the lowest cost per thousand. That means that the larger newspaper, even though it may charge a higher price per line of advertising, once you distribute that price per line over a great circulation it is reduced to the point where the cost to reach each reader is much lower than it is for the smaller paper, even though the smaller paper may have a lower price per line of advertising.

This balancing cost per thousand in the advertiser's mind is one of the major factors in driving a lot of second newspapers, smaller newspaper markets in the country, out of business. It is what happened in Philadelphia, Washington, Cleveland, Hartford, and numerous other places.

The CHAIRMAN. I am curious. In the example you cited of the Cocoa Today in Florida; this was a brand new newspaper that started out as a daily, looked at the market and saw that it would go? It was a small market to start with, but they saw it growing?

Mr. MORTON. Yes, sir.

The CHAIRMAN. Is that the only time since World War II when a daily has been started, and has flourished?

Mr. MORTON. There have been some small suburban dailies that have been basically converted from weekly publication.

The CHAIRMAN. I do not mean those papers because I have seen that happen on occasion. They start out once a week, twice a week, three times a week, and they may not go 7 days but they go 5 days. I mean those papers starting full blown as a daily. Is the Cocoa example the only one?

Mr. MORTON. That is the only one that springs to mind. I always hesitate to say "never", and there may be some very small daily newspapers that have started in emerging markets like that. I can say without any fear of contradiction that there has been no market in which a daily newspaper started up where there was already a daily newspaper.

The CHAIRMAN. Mr. Morton, I have no more questions. I want to again thank you because this argument keeps getting thrown back at me over and over, about how anybody can start a newspaper. I think when people say that it is the equivalent to saying that anybody can have a CB radio. They can not mean a newspaper in the normal, traditional sense of wide distribution. They mean a mimeographed flyer about "come to the rally," and those are not the same things.

Mr. MORTON. Thank you.

The CHAIRMAN. Thank you very much.

Next we will have from Mr. Joseph Sitrick of Blackburn & Co. Good morning.

STATEMENT OF JOSEPH M. SITRICK, BLACKBURN & CO.

Mr. SITRICK. Good morning, Mr. Chairman.

I have a statement which I have submitted to you and I will just summarize from that statement some of the highlights of the statistics.

I am vice president of Blackburn & Co., which is a national media brokerage firm headquartered in Washington, D.C. Prior to that I was administrative assistant to the Chairman of the Federal Communications Commission and in charge of congressional relations, public relations director for the National Association of Broadcasters, and a Washington news correspondent for various organizations prior to that.

I am involved primarily in negotiating the sales of radio and television stations, newspapers, and cable TV systems. Most of our sales are in the broadcast media. I am also involved as an appraiser of such properties for various purposes, such as sales, tax disputes, settlement of estates, partnership buyouts and on behalf of banks and investment houses.

I have followed with interest the progress of these hearings to date. You have already heard from some technological experts and some constitutional experts, and this morning from some noted news people.

Reversing the usual sequence and getting at the bottom line first, there is no doubt in my mind that if one wants media ownership it is far easier to enter in broadcasting than it is in print. From my reading of history, I believe that the broadcast media would have been specifically included in the first amendment had it existed at that time. Later, the legislative history of the Communications Act, to my reading, reveals no desire or intention to regulate program content, aside from obscenity.

The role of Government was foreseen as an electronic traffic cop to arrange the licensing frequencies and power so that there would be no interference between stations. Government is still needed for that purpose and to authorize and promote new and expanded technologies. Examples of this technology carry all the weird initials today—STV, MDS, SMATV, DBS, LPTV.

In my remarks today I am going to concentrate on the availability of broadcast media and the economics of building and buying such media compared with print media. You have heard most of the details on the print media from John Morton and I will not repeat those except for comparison purposes.

Putting aside acquisitions for a moment, the economics of operation in print are far more severe than they are in broadcasting. Labor costs are higher, raw materials such as newsprint are expensive and sometimes very scarce. Radio and television require no raw materials or inventory. The product they sell is time and it replenishes itself every day.

Third, the method of delivery is slow, cumbersome and expensive for print. In fact, the paralysis of delivery trucks in rush hour in major markets has been a very big factor in the demise of some of the afternoon dailies. If the trucks do get through, then you have a problem of the delivery boys in getting to the homes. On the other hand, radio and television signals are transmitted directly into homes and cars with no middle man and no missed homes.

Because of all these problems of raw materials, printing presses, assembly, engraving, delivery, circulation, the labor costs of print are substantially higher and more employees are required. The evolution of our own company is valid proof to me of the easier availability of broadcast media. In the early days of our company

we were involved far more in newspaper sales, including some in major markets. However, our inventory in print became more and more limited, while we had an ever increasing number of stations available.

Just to go through a few of the highlight figures of what exists on the electronic side versus the print side, as of now, in 1982, there are approximately 9,160 radio stations, 1,071 television, 4,825 cable systems, about 18,000 movie screens, 47 subscription television stations, 346 master antenna television setups, about 152 direct-broadcast satellite, and about 210 low power television stations. That adds up to about 34,000. On the print side, there are about 1,730 dailies and about 7,666 weeklies, for a total of 9,396.

As things stand today, we don't anticipate any growth in the number of newspapers and, more likely, there will be a small decline over the next 10 years. Using our current totals, there are about 3½ times as many outlets on the broadcast side as there are print.

It should be noted that the low-power television is very much in the application stage and if you delete that as very unreliable at the moment and also movie screens, which may not be exactly comparable to radio and television stations, there would still be double the number on the electronic side.

So far as the future is concerned, for the next 10 years I do not have a crystal ball for that, but we do know the number of applications on file with the FCC and the interest in obtaining licenses. We also know that the number of papers are shrinking because of the economics, and we also know that if teletext becomes popular newspapers will become indistinguishable from electronics because of the method of delivery into homes.

Even if we do not show any further shrinkage in the next 10 years in print, the ratio could be 5 to 2 by 1992. I do not know whether you want all the specifics of how many of each, but it would get up to that ratio.

Talking about low power television for just a moment, because I think that has room for great expansion, the National Translator Association had a convention a few weeks ago, and the main concern there of the delegates involved in the processing of more than 7,000 applications that are now pending before the FCC, only about 130 construction permits have been granted during the past year, with about 35 stations on the air, excluding Alaska, where they have an additional 175 ministations through a special waiver of FCC rules.

Undoubtedly, many of these applications will wash out, and it is highly unlikely that they will all be granted and built. The projection of 6,000 stations by 1992 is fairly speculative because there is no way of knowing at this point how they will fit into the economic mix and whether they will be outmoded from a technological standpoint.

In fact, the same thing applies to a number of the other elements on the list, such as cable television, subscription television stations. They really are just a best guess at this stage of the industry development.

THE CHAIRMAN. But isn't it fair to say that something is going to develop that is going to rapidly multiply what we call television

today? It may be cable: it may not be. It may be low power. But it is not a question that some of them are going to grow. You just cannot tell right now which will become the prevalent method.

Mr. SITRICK. That is correct. It will grow, in one form or another, whichever becomes the prominent technological means of delivering it.

As far as the cost of putting a low-power station on the air, and I think that is significant, it was agreed at the convention that although it is possible to do it for as little as \$30,000, it is more likely that a first class origination capability would take between \$70,000 and \$80,000. If a station is content with broadcasting satellite-fed material, then it might get away with spending as little as \$20,000. But that is the range of cost, and it is quite low compared to other things we have talked about.

Before getting into the relative cost of purchasing print, existing newspapers, that is, versus broadcasting, let's look at the cost of building and startup. Mr. Morton already provided you some facts on that, but it is obvious that it is far more expensive to build and operate a newspaper, maybe 15 to 20 times as much, in some cases.

The cost of construction and initial operation of a station varies with the type of station, the power, the market and so forth. Let me give you just a brief example. An AM station, for example—amplitude modulation, which it stands for—requires a ground system, requires one or more towers and a ground system underneath the ground for transmission. This tends to be more expensive.

And if it is a directional array, which is requiring more than one power and channeling the power in one direction or another so as not to interfere with another existing station, then that is more expensive than the single nondirectional tower.

Moving to FM stations and TV for a moment, they are different means of transmission. They are line of sight, in other words, from the top of the antenna to the horizon, so that they do not require ground systems. An FM station may require construction of its own tower, but very frequently all that is required is to place an antenna on top of an existing rooftop or existing tower. When that is possible, the cost is obviously much less.

The same thing is true of TV. When the licensee has to erect a tall tower of up to about 2,000 feet, it can be very expensive. When the station can share a tower or rent space for the antenna, the cost is considerably less.

On the average—just very quickly the average—it would be something like as follows. An AM station, nondirectional, might run anywhere from \$250,000 in a small market up to \$1 million in a major market. If you get into directional patterns, it might be anywhere from \$500,000 to \$1.750 million.

On the FM side, small markets, \$500,000 up to \$2 million for major markets where a station has to purchase land and construct its own tower. Where it does not have to do that, then the cost is considerably lower, anywhere from \$250,000 up to \$500,000 in a major market.

Television the same thing. Television, whether it is small market or major, does not make that much difference usually. It may run \$4 million construction up to about \$5 million in a major market,

but it would be reduced significantly if they can share a tower or lease a tower, from \$2.750 million to \$3.5 million.

In these above estimates, the element involving the tower can run from \$1.5 million to \$1.75 million. One of the reasons for that, and this is a little bit technical, but it indicates that perhaps the cost of television stations will come down even further, is what they call the set-back rule—that for every foot of tower there must be 1 foot of radius so that if the tower fell it would not hit anything else, which is a false rule, in effect, because a tower does not fall that way. It kind of crumbles and it does not fall flat over.

In terms of coverage, radio and TV stations are comparable to daily newspapers. Weekly newspapers are more like small market and then, although there are differences, a monthly newspaper might be comparable to an amateur or ham radio. The cost of mailing and producing a four-page newsletter would likely be three times the initial cost of a ham radio set. But the radio set can be used over and over, while the raw material, production costs and mailing have to be repeated with each issue of the publication.

Now except for the new low-power stations, which I have gone into before, it is common and easiest to enter broadcasting through acquisition of facilities. Over the years, the number of turnovers of broadcast facilities have averaged around 500 a year. I have included a chart showing that from 1974 on, for example, it ran from about 389 total deals up to about 575, and then it breaks down the total number of stations sold in each category.

Maybe of more importance were the average prices. The average station price was \$710,000 overall last year, while the AM average was \$453,000 and the FM average was \$870,000. The highest average was for an AM-FM combination, at about \$1.486 million.

In the full year of 1981, there were 746 stations involved in 575 transactions compared with 610 stations and 472 transactions, in 1980. The average television station sold for \$1.2 million versus \$1.597 million in 1980. The average AM went for \$797,000; the average FM for \$2.4 million; and the average AM-FM package, \$1.7 million.

There is a little variance in the statistics because some were based on actual sales in 1981, and some are based on what the FCC approved, and some are based on what were closed in that year.

More important, I think, we made a study strictly of the transactions which our company handled and in those with which we are personally familiar the average large market radio station, AM-FM combination, was about \$4.6 million, but the range was all the way from about \$2 million up to \$10 million.

For a medium market, the average was about \$2 million. The range was anywhere from \$500,000 to \$4.5 million. The small market stations averaged about \$500,000, but they ranged anywhere from \$200,000 up to about \$1.6 million for a couple of very unique situations.

The largest individual sale for a TV station in 1981 was the \$220 million in Boston. The second largest was a \$79 million transaction in Kansas City.

Broadcasting magazine also has its own survey which differs a little bit from other statistics because, as I said, there is an overlap with what is counted, but essentially the figures are about the

same. The average price for FM in 1981 was \$1.35 million, which was a decrease of 9.5 percent from 1980. A total of 96 FM's were sold. And the average AM-FM combination was \$1.046 million.

Among the transfers which were actually approved last year, the largest TV was \$49.4 million in Dayton, Ohio. The second largest was \$48 million in Norfolk, Va. The largest single radio deal was \$18 million. All these statistics are in there.

May I conclude by saying that as a member of a major firm, we are able to fill our requests from buyers in nearly any market in the country for a broadcast facility, but we cannot do that in newspapers. They just are not available.

The prices of broadcast stations are public knowledge since they are filed with the FCC and they are included in public notices. On the other hand, newspaper prices are not public, and they are generally not released by the parties. But there are transactions to which we are privy or have been involved and I can cite you just a couple of numbers which gives you the comparison.

Within the past year, we sold a particular radio station for about \$600,000. In that same market, the daily newspaper has a value of about \$20 million. In another medium market, the newspaper was \$100 million, one of the TV's is worth \$20 million, and the AM-FM in the \$3 million range. Further, in two other large markets daily newspapers sold for \$20 million and \$95 million in 1980, while radio stations in those markets sold for as little as \$600,000 and as high as \$7.5 million.

In Washington, D.C., which is considered one of the best radio station markets in the country, one has been sold for less than \$1 million, several for just over \$1 million, while the most recent newspaper sale there was over \$30 million, and that newspaper, with the great resources of Time, Inc. behind it, had to go under financially. It just could not operate in the black.

In short, if there is a scarcity, it is more of an economic limitation and applies primarily to print and not to broadcasting, and there are plentiful lending institutions with a high regard for broadcasting and a willingness to provide financing.

If I may state a personal conclusion to the preceding facts, I believe that broadcasting does deserve equal first amendment rights and I believe a constitutional amendment is the clearest and more direct means of accomplishing that.

The CHAIRMAN. Low power television is a form of television that most people are not yet familiar with. Could you elaborate more fully on why it costs so relatively little? I mean, \$80,000 is not much to start a low power television station.

Mr. SITRICK. It does not require the expensive equipment. It requires a low power television transmitter, which is a big cost item. It requires only an antenna on an existing structure. They can put an antenna almost anywhere—an apartment building, a hotel, existing tower—and the fact that it is low power. Its power bills are less and so is the entire function.

And it does not have to abide by all the rules that normal television stations do of providing balancing programing and news and public affairs and all the expensive things.

The CHAIRMAN. However, it is only with the grace of the current FCC that they do not have to abide by those rules.

Mr. SITRICK. That is true. That is as of now.

The CHAIRMAN. Assuming that low power television takes off and becomes profitable, it is hard to tell what a future FCC might start to require.

Mr. SITRICK. That is true.

The CHAIRMAN. But it is a very valid point—\$80,000 is not to be sneezed at, but almost anyone who is serious can put together that kind of a partnership and get a low power television station. They may exist in the thousands. Whether it is 6,000 or 3,000 or 9,000, depends upon whatever technology is most prevalent, but there is no question that if you want to reach people, you would be a lot better off to try to do it that way than to try and find a newspaper to buy.

Mr. SITRICK. I agree with you.

[The statement follows:]

STATEMENT OF JOSEPH M. SITRICK, VICE PRESIDENT, BLACKBURN & CO.

My name is Joseph M. Sitrick, and I am Vice President of Blackburn & Company, Inc., national media brokers headquartered in Washington, D.C., but with regional offices around the country. I have been involved in media brokerage for over 24 years.

Prior to that, I served as Administrative Assistant to the Chairman of the FCC and in charge of congressional liaison. Also, I was Director of Public Relations for the National Association of Broadcasters; an official of the VOA and USIA and as a Washington news correspondent.

I am involved primarily in negotiating the sales of radio and television stations, newspapers and cable television systems. Most of our sales are in the broadcast media. I am also involved as an appraiser of such properties for such various purposes as sales, tax disputes, settlement of estates, partnership buyouts and on behalf of banks, investment houses, insurance companies and other lenders.

I have testified in this capacity before federal and state courts, arbitrators, Internal Revenues, and FCC and congressional committees.

I have followed with interest the progress of these hearings to date. You have already heard from technological experts that there is no longer a spectrum scarcity, if there ever was one.

You have also heard from noted constitutional experts regarding the rationale for different first amendment standards for broadcast and print.

From my reading of history, I believe the broadcast media would have been specifically included in the first amendment, had they existed at that time.

Later, the legislative history of the Communications Act reveals no desire or intention to regulate program content, aside from obscenity. The role of government was to serve as an electronic "traffic cop" licensing frequencies and power so that stations would not interfere with each other. Government is still needed for that and to authorize and promote new and expanded technology.

This latter role has brought into being even more media with initials such as STV, MDS, MATV, DBS and LPTV.

In my remarks today, I will concentrate on the availability of broadcast media and the economics of building or buying such media. I will also provide some comparison with print media where I have firsthand knowledge. However, I understand that you will hear from John Morton, who is an expert on newspapers and media and he will provide detailed testimony on that aspect.

Reversing the usual sequence and starting with the bottom line conclusion, there is no doubt in my mind that if one wants media ownership, it is far easier to enter broadcasting than print.

Putting aside acquisitions for a moment, the economics of operating in print are far more severe than in broadcasting. First, labor costs are higher. Secondly, raw materials such as newsprint are expensive and sometimes scarce. Radio and television require no raw materials or inventory—the product they sell is time and it replenishes itself every day. Third, the method of delivery is slow, cumbersome and expensive for print. In fact, the paralysis of delivery trucks in rush hour traffic has been a big factor in the demise of some afternoon dailies. If the trucks get through, next comes the delivery boys and their problems.

On the other hand, radio and television signals are transmitted directly into homes and cars with no middlemen or missed homes.

Because of all the problems of raw materials, printing pressures, assembly, engraving, delivery and circulation, the labor costs of print are substantially higher and more employees are required.

The evolution of our company is vivid proof to me of the easier availability of broadcast media. In the early days of our company, we were involved in more newspaper sales, including some major markets. However, our inventory in print became more and more limited while we had an ever-increasing number of stations available.

What are the facts with regard to the number of broadcast media in existence versus print and what is the outlook for the next decade.

On the electronics side, the most current information available shows the following breakdown in round figures:

Electronic

	1982
Radio stations	9,160
Television stations	1,071
Cable systems	4,825
Movie screens	18,040
Subscription television (STV)	47
Multipoint distribution service (MDS)	346
Master antenna television/satellite master antenna television (MATV/SMATV)	600
Direct broadcast satellite (DBS)	152
Low-Power television (LPTV)	210

On the print side, there are currently about 1,730 dailies and about 7,666 weeklies for a total of 9,396.

As things stand today, we do not anticipate any growth in the number of newspapers and more likely there will be a small decline in the next ten years.

Using these totals, there are 3.5 times as many outlets on the electronics side as print.

It should be noted that the LPTV aspect is still primarily in the application stage. If that were deleted and also movie screens, there would still be nearly double the number on the electronic side.

So far as the future is concerned, I do not have a clear 10-year crystal ball, but we do know the number of applications on file at the FCC and the interest of obtaining licenses. We also know that the number of papers are shrinking because the economics of print and that is getting worse. We also know that if teletext becomes popular, newspapers will become undistinguishable from electronics because of the method of delivery into the homes. Even if we show no further shrinkage the next ten years in print, the ratio could be five to one by 1992.

In reaching that ratio, I used an increase of about 30 percent in radio to 11,875; a smaller increase of TV stations to 1,140; a jump of about 35 percent in cable to 6,500 systems; an increase in MDS from 346 to 700; a decline in MATV and SMATV; and a large increase in LPTV to 6,000.

Further, if you eliminate movie screens and reduce the estimate on LPTV, you are still looking at 2.5 to three times ratio in 1992. My reference to LPTV relates to the great current demand, but the fact that it is not yet known whether it will be economically feasible on a wide scale. That is difficult to predict at this point.

A few weeks ago, the National Translator Association held its convention and the main concern of delegates involved the processing of more than 7,000 LPTV applications that are pending before the FCC. About 130 construction permits have been granted during the past year with about 35 stations now on the air (excluding Alaska, where about 175 "mini stations" are on the air through a special waiver of FCC rules).

Undoubtedly, many of these applications will wash out and it is highly unlikely that they all will be granted and built. The projection of 6,000 stations by 1992 is fairly speculative, because there is no way of knowing at this point how they will fit into the economic mix and whether they will be outmoded from a technological standpoint.

In fact, the same thing applies to a number of the other elements on the list such as cable systems, subscription television stations, etc. They are simply a best-guess at this stage of the industry's development.

The best estimate of the experts at the convention was that it would take about a year before the FCC computer system is fully operational and processing about 200 applications a month. Further, it may take almost two years before there is action on "tier two" applications for stations serving markets 101 through 212.

As for the cost of putting an LPTV outfit on the air, it was agreed that although it is possible to do it for as little as \$30,000, it is more likely that for a first-class origination capability, it will take between \$70-80,000. If a station is content with rebroadcasting satellite-fed material, then it might get away with spending as little as \$20,000.

Commissioner James Quello, who spoke at the convention, felt that LPTV will have an advantage over direct broadcast from satellite when the later is introduced, probably in 1986, in that LPTV will be able to provide very localized programming and be available without installation of a satellite receiving dish.

Mr. Quello felt that LPTV will have a significant impact on the industry as a whole and that it is not like CB radio which was more of a toy. In the CB area, applications have dropped drastically from more than one million a month several years ago to about 42,000 a month now.

Before getting into the relative costs of purchasing print versus broadcasting, let us look at costs of building and start-up. Mr. Morton will provide facts on the former, but I do know that it is far more expensive on the print side, perhaps as much as a 15 to 20 times ratio in some cases.

The cost of construction and initial operation of a station varies with the type of station, power, market size, etc. For example, an AM station requires installation of a ground system and the erection of one or more towers, depending on whether it requires a directional array. Further, the lower frequencies require taller and more expensive towers.

FM stations do not use ground systems, but may require construction of a tower. However, very frequently all that is required is placing an antenna on an existing tower or rooftop. When that is possible, the cost is obviously less.

The same is true of TV. When the licensee has to erect a tall tower of up to 2,000 feet, it can be very expensive. When the station can share a tower or rent space for its antenna, the cost is considerably less.

On the average, the costs would be as follows: We will look at AM, FM and TV, and will break it down by major market, medium market, and small market. Our expenses will assume that it is necessary for the licensee to acquire land and construct his own tower. In the case of FM and TV, I will also give an estimate of how much the construction would be if it were possible to lease a site and rent space on an existing tower.

As for AM, we have divided that into non-directional and directional, which requires two or more towers and therefore is more expensive.

AM STATIONS

Market size	Nondirectional	Directional
Major	\$1,000,000	\$1,750,000
Medium	750,000	1,000,000
Small	250,000	500,000

FM STATIONS

Market size	Including purchase of land and construction of tower	Leasing
Major	\$2,000,000	\$500,000
Medium	750,000	300,000
Small	500,000	250,000

TV STATIONS

	Market size	With tower and land	Leasing tower and land
Major.....		\$5,000,000	\$3,500,000
Medium.....		4,500,000	3,000,000
Small.....		4,000,000	2,750,000

In the above television estimates, the element involving the cost of the tower generally can run from \$1.5 to \$1.75 million. One of the major reasons for this expense of the tower and land is the "setback" rule which provides that for every one foot of tower, there must be one foot of radius. Theoretically, this is so that the tower will fall only on land owned by the radio or TV station. The fallacy of this is that towers do not fall intact, but in sections, sort of in a crumbling manner. At any rate, this does require more land than is actually needed.

In terms of coverage, radio and TV stations are comparable to daily newspapers. Weekly newspapers are more like small-market radio.

Although there are distinct differences, a monthly newsletter might be comparable to amateur or "ham" radio. The cost of mailing and producing a four-page newsletter would likely be three times the initial cost of a ham radio set. However, the same radio can be used over and over, while the raw materials, production costs and mailing must be repeated with each issue. This is one of the factors that make print media expensive.

A modest mimeographed throw-away flyer would be comparable in cost to a CB radio and antenna, although neither of them is likely to be used for a serious editorial message.

Except for the new LPTV stations, it is most common and easiest to enter broadcasting via acquisition of existing facilities. Attached is a rundown of station sales in recent years. As noted, the normal turnover annually is in the 500 to 600 range. According to the *Broadcast Investor*, the history of sales since 1974 is as follows:

	1981	1980	1979	1978	1977	1976	1975	1974
Total deals.....	575	472	484	496	436	444	370	389
Total stations sold.....	746	610	641	674	545	570	467	507
Total AM stations.....	445	334	345	375	304	352	290	302
Total FM stations.....	276	233	232	242	203	185	157	175
Total TV stations.....	25	43	59	57	38	33	20	30
Total dollar value (millions).....	\$894	\$905	\$1,173	\$810	\$425	\$304	\$251	\$296
Total TV dollar value (millions).....	\$298	\$547	\$693	\$381	\$221	\$121	\$127	n/a
Total radio dollar value (millions).....	\$596	\$358	\$480	\$429	\$204	\$183	\$124	n/a

In the first quarter of 1982, there were 181 station deals, of which 78 were AM, 78 were FM, and five TV for a total of 161 stations.

As a dollar amount, the total was \$109.6 million, of which \$103.9 million was radio and \$5.7 million for TV. That was unusually low for TV. For example, in the first quarter of 1981, total TV sales were \$63.9 million and the average price was \$12.8 million versus an average of \$1.4 million in the first quarter of 1982.

The average station price was \$710,000 overall, while the AM average was \$453,000 and the average FM was \$870,000. The highest average was for an AM/FM combination which was \$1,486,000. In the full year of 1981, there were 746 stations involved in 575 transactions, compared with 610 stations in 472 transactions in 1980.

The total dollar value in 1981 was \$894 million versus \$905 million in 1980. The total TV values were \$298 million versus \$547 million in 1980.

Total radio values in 1981 were \$596 million versus \$358 million in 1980.

The average TV station sold for \$1.218 million in 1981 versus \$1.597 million in 1980.

The average AM went for \$797,000 in 1981, versus \$504,000 in 1980.

The average FM was \$2.419 million in 1981, versus \$1.235 million in 1980.

The average AM/FM package was \$1.7 million in 1981 versus \$1 million in 1980.

With regard to TV ownership, there has been a decline in newspaper-TV cross-ownership in the same markets. As of January 1, 1982, there were approximately 35

stations involved of the 420 in the top 100 markets, or a mere 8.3 percent. This compares with 60 stations, or 16.1 percent in 1973.

There has been an increase in overall TV affiliations with newspapers, from 28 percent in 1970 to 33.3 percent in 1982. One of the principal reasons is the growing number of media companies with holdings in print, broadcasting and cable.

We made a study strictly of the transactions which our company handled and in that the average large-market radio station or AM/FM combination was approximately \$4.67 million, but the range was all the way from \$2 million up to \$10 million.

For medium-market radio stations, the average was about \$2 million, but the range was anywhere from \$500,000 to \$4.5 million in some special circumstances.

The small-market stations averaged about \$500,000, but they ranged anywhere from \$200,000 up to \$1.6 million for a couple of very unique situations.

In 1981, the largest individual sale was for a TV station in Boston which sold for \$220 million and the second largest was a \$79 million television sale in Kansas City.¹

The Broadcasting Magazine annual survey of station sales differs slightly from the Broadcast Investor newsletter survey in that certain sales which were not consummated in 1981 were not included in the Broadcasting survey. In any case, according to Broadcasting, the average price for a stand-alone AM in 1981 was \$568,172, a decrease of 25.7 percent from the 1980 average of \$765,000. In all, 245 stand-alone AM stations were sold for a dollar volume of \$139 million.

The average price for a stand-alone FM in 1981 was \$1.35 million, a decrease of 9.5 percent from the 1980 average of \$1.493 million. A total of 96 FM's were sold for \$129,672,000.

The average price for an AM/FM combination was \$1,046,501, about 8.8 percent below the 1980 average of \$1,147,670. In all, 139 combinations were sold for \$145,463,000.

The total volume for 1981 television sales was \$227,950,000, down from the 1980 figure of \$534,150,000. The average price of all TV stations was \$11,997,000.

There were two sales of groups in 1981, one for \$108.5 million and the other for \$67 million, the latter being a radio group.

Among transfers which were actually approved last year, the largest TV was \$49.4 million for a station in Dayton, Ohio, and the second largest was a \$48 million in Norfolk, Virginia.

The largest single radio deal was approximately \$18 million in Los Angeles.

The highest price for a UHF station was \$7.6 million in Sacramento, California, and the second highest at \$9.2 million in Chicago.

The largest single price for an AM station was \$15 million in Denver, and the second highest was \$8.5 million in New York City. Other prices ranged all the way down to approximately \$125,000.

Attached is a chart showing the total dollar volume of transactions approved by the FCC from 1954 through 1981 and the number of stations changing hands in each of those years.

The principal restrictions on ownership of AM, FM or TV are not economic, but regulatory. No entity may own more than seven AM's, seven FM's or seven TV's (only five of which may be VHF). Further, no entity may control or operate two or more stations in the same broadcast service in the same market, nor may there be common ownership of TV and AM or FM in the same market, except UHF on a case-by-case basis. Also, there may not be any combinations of co-located newspaper/radio or newspaper/TV formed except for existing ones.

There is also a prohibition of cable systems and TV stations where the TV stations predicted Grade B contour overlaps in whole or in part in the service area of the cable system.

There is no limit on LTV or MDS, or cross-broadcast restrictions in the same market or on cable ownership. Moreover, the current FCC Chairman, Mark Fowler, has stated his intention to propose to the FCC a repeal or a liberalization of multiple ownership rules which would make for an even greater freedom to acquire stations.

Actually, in TV, only four of 392 entities owned the maximum number allowed under the rule. However, many more do not want to use their limit on medium or smaller situations, so they wait for large ones to become available. Relaxation of the rule would open more opportunities for ownership.

Another regulatory factor involves the FCC's allocation policies which restricts most large markets to three VHF's, while there are numerous VHF and UHF as-

¹ These sales will be included in 1982 television statistics.

signments to smaller markets where there has been little demand because it is uneconomical to operate TV in those markets.

For example, there are TV allocations to 1,274 markets, but all stations are in only 275 ADI markets, some encompassing several communities each.

The FCC today does not limit ownership except to prevent interference and provide engineering standards in any of the new technologies such as cable, LTV, MDS, DBS, etc. It has been deregulating radio and TV because it is no longer believed that there is a scarcity factor.

As a member of a major national media brokerage firm, we are able to fill requests from buyers for broadcast stations in nearly any market in the country, including such major ones as New York, Chicago, Dallas, etc. We would not be able to fill requests for the purchase of newspapers in such markets. In those few instances where we could, the price differential would likely be tremendous. The prices of broadcast stations are public knowledge since they are filed with the FCC and included in the public notices and in the trade press.

On the other hand, the sales prices of newspapers are not public information and they are not generally released by the parties. Therefore, it is difficult to provide comparisons with specific identities of markets.

However, there are newspaper transactions to which we are privy or where we have done appraisals, or where there has been fairly reliable trade press reports about selling price. Thus, I can cite some numbers that are based on actual cases.

For example, within the past year, we sold a radio station for approximately \$600,000. In that same market, the daily paper has a value of approximately \$20 million. In another medium market, the newspaper is worth approximately \$100 million, one of the TV's is worth \$20 million and an AM/FM is in the \$3 million range. Further, in two other large markets, daily newspapers sold for \$20 million and \$95 million in 1980, while radio stations in these markets sold for as little as \$600,000 and as high as \$7.5 million.

In the Washington, D.C., market, considered one of the best in the country, radio stations have been sold for less than \$1 million, several AM's for just over \$1 million, while the last few FM's have ranged from \$2 million to \$8 million. Further, to my knowledge, every radio station in the market, and there are approximately 34, is operating profitably. There is one possible exception, but the great bulk of them are operating in the black.

The Washington Star, on the other hand, sold for over \$30 million and even with the vast financial resources of Time, Inc., it could not survive.

In short, if there is a scarcity, it is more an economic limitation and it applies primarily to print and not broadcasting.

For those who are able to enter broadcasting with new facilities, the entry cost is even less. This was illustrated in the previous estimates I provided.

Moreover, there are plentiful lending institutions with a high regard for broadcasting and a willingness to provide financing for qualified buyers.

In short, for anyone who really wants to join the swim, the water is fine.

If I may state a personal conclusion to the precedings facts, I believe broadcasting deserves equal first amendment rights and I believe the constitutional amendment is the clearest and most direct means of accomplishing this.

Thank you.

28 YEARS OF STATION TRANSACTIONS

	Dollar volume of transactions approved by FCC				Number of stations changing hands		
	Total	Radio only	Combined Radio-TV ¹	TV only	Radio only	Combined Radio-TV ¹	TV only
1954.....	\$60,344,130	\$10,224,047	\$26,213,323	\$23,906,760	187	18	27
1955.....	73,079,366	27,333,104	22,351,602	23,394,660	242	11	29
1956.....	115,605,828	32,563,378	65,212,055	17,830,395	316	24	21
1957.....	124,187,660	48,207,470	47,490,884	28,489,206	357	28	38
1958.....	127,537,026	49,868,123	60,872,618	16,796,285	407	17	23
1959.....	123,496,581	65,544,653	42,724,727	15,227,201	436	15	21
1960.....	99,341,910	51,763,285	24,648,400	22,930,225	345	10	21
1961.....	128,804,167	55,532,516	42,103,708	31,167,943	282	13	24
1962.....	101,742,903	59,912,520	18,822,745	23,007,638	306	8	16
1963.....	105,303,078	43,457,584	25,045,726	36,799,768	305	3	16
1964.....	205,756,736	52,296,480	67,185,762	86,274,494	430	20	36
1965.....	135,123,766	55,933,300	49,756,993	29,433,473	389	15	32

28 YEARS OF STATION TRANSACTIONS—Continued

	Dollar volume of transactions approved by FCC				Number of stations changing hands		
	Total	Radio only	Combined Radio-TV ¹	TV only	Radio only	Combined Radio-TV ¹	TV only
1966.....	135,718,316	76,633,762	28,510,500	30,574,054	367	11	31
1967.....	172,072,573	59,670,053	32,086,297	80,316,223	316	9	30
1968.....	152,455,412	71,310,709	47,556,634	33,588,069	316	9	20
1969.....	231,697,570	108,866,538	35,037,000	87,794,032	343	5	32
1970.....	174,785,442	86,292,899	1,038,465	87,454,078	268	3	19
1971.....	393,547,924	125,501,514	* 750,000	267,296,410	270	² 2	27
1972.....	271,330,537	114,424,673	0	156,905,864	239	0	37
1973.....	230,381,145	160,933,557	2,812,444	66,635,144	352	4	25
1974.....	307,781,474	168,998,012	19,800,000	118,983,462	369	5	24
1975.....	259,485,961	131,065,860	0	128,420,101	363	0	22
1976.....	290,923,477	180,663,820	1,800,000	108,459,657	413	3	32
1977.....	289,871,604	161,236,169	0	128,635,435	344	0	25
1978.....	651,728,398	331,557,239	30,450,000	289,721,159	586	5	51
1979.....	1,116,648,000	335,597,000	463,500,000	317,581,000	546	52	47
1980.....	876,084,000	339,634,000	27,000,000	534,150,000	424	3	35
1981.....	754,188,067	447,838,067	78,400,000	227,950,000	625	6	24
Total.....	7,709,023,051	3,439,360,332	1,261,169,883	3,019,822,736	9,140	NA	806

¹ Prior to 1971 figures represent total number of deals involving both radio and television stations.

² Beginning in 1971, when the FCC's one-to-a-customer rule prohibiting the sale of co-located TV and radio stations, became effective, figures represent the total number of separately located TV and radio stations that were sold in packages.

Note.—Dollar volume figures represent total considerations reported for all transactions, with the exception of minority-interest transfers in which control of the licensee did not change hands. All sales have been approved by the FCC. Also, prior to 1978, a combined AM-FM facility was counted as one station in computing the total number of stations traded.

The CHAIRMAN. Mr. Sitrick, thank you very much. When we hear from Mr. Eller, I hope we will have put to rest the argument that anybody can get in the newspaper business but you cannot get into radio or television.

We will conclude with Mr. Karl Eller.

STATEMENT OF KARL ELLER

Mr. ELLER. Thank you, Senator Packwood. I guess I am the last and, probably, the least.

The CHAIRMAN. Certainly, not the least. All three of you are complementary and all three of you, I think—unless there are people in this country I do not know about—are presenting evidence that cannot be rebutted on the comparative cost of media properties and which areas are easier to get into.

Mr. ELLER. Well, that is what I was going to say. I think that the two previous witnesses—Joe Sitrick and Mr. Morton—one is an analyst and one is a broker and I guess I am the entrepreneur that has been there on the firing line with buying and selling and operating media properties.

I will kind of summarize a little bit and then maybe you can ask me some questions that I can answer, but I will not repeat anything that the other two have said because what they said is exactly true.

The marketplace today for buying and selling media properties is really a supply and demand situation very, very much dictated by numerous factors. Least is the market. You look at the size of the market, the quality, the demographics, the location—whether it is in the Southeast, Southwest or an area you think that has a great growth potential—the competition from all the media in the mar-

ketplace, when you are looking at the media purchase, who owns the competition, the overall image in the community by the prospective media you are going to try to buy, the ratings, the programing, the people—numerous factors.

Last but not least, we look at the projections of the marketplace. We look at what kind of terms you can get in cash or financing situations. Can you pay off your investment in a reasonable length of time? All those go into what you look at, and many more, and, in sum, are just gut decisions as to whether you want to go after a market or media property.

The old adage of anyone can start a newspaper but you need FCC approval and broadcast licenses are harder to come by is no longer a statement with any meaning. I think I will go on to try to explain that a little bit more.

Today I guess you saw in the Washington Journal where the 3-year rule was removed, and this makes it easier for people to get in and out of broadcast properties that they want to sell or buy. And it is probably going to put a lot more properties on the marketplace.

Again, as Mr. Morton said, there has not been a new newspaper started in many years that was successful in a market that had another daily newspaper. USA Today, which I happen to be somewhat associated with because of the Gannett connection, is a national newspaper that probably will take in the neighborhood of \$25 to \$50 million in seed capital to start, and with any other company would have taken a lot more because Gannett has many resources throughout the country in printing plants and people that they have borrowed from the newspapers to bring into Washington to start this newspaper and they can do it on a much more economical basis than anybody else.

The jury is still out whether it will be successful. So far it has been running ahead of projections and it might be exactly what the public is looking for.

Only very large companies can take that kind of a risk to start a new daily publication as USA Today. What we are saying is that the price of entry into the marketplace for newspapers in towns which have one or two newspapers is too exorbitant and economically very damaging. Again, it is the risk-reward situation, where you just—the economics of the thing, the competition, you just cannot get the advertising support that you need to make it successful.

Examples of closing lately are the Philadelphia Bulletin, the Buffalo newspaper, the Cleveland Press. The merging of two newspapers into one in joint operating agreements in Cincinnati and Seattle have occurred. Also, many papers are on the sick list, like the Boston Herald-American, the Los Angeles Examiner, the Chicago Sun-Times, which is probably stronger than most but still weak in a two-place marketplace, the New York Daily News. The two Detroit newspapers are probably both losing very substantial sums of money.

In buying newspapers, since there is usually only one to a market, the prices people are willing to pay are greater from a multiple standpoint than broadcast properties. Competition for advertising dollars which support most media, in the neighborhood of

75 to 100 percent of the revenue stream, is among all forms of media in the marketplace, even though on a national level certain media get percentages of the ad dollars. Like, for example, the broadcast gets 20 percent. Maybe the newspapers get 27 or 29 percent and it goes on like that.

In local areas, the percentages can be very much different because of the competition of the different marketplace factors. You have a good newspaper that does a very good job of selling advertising and delivering goods and services and delivering results for the advertiser. So, therefore, he might get a greater share and become—to another marketplace the newspaper does a very poor job of giving the news consumer—maybe it does a very poor job of selling advertising. It is the same thing in broadcast properties, out-of-home media and all kinds of other—skywriting and everything else you want to talk about.

Your ability to start a new radio station and TV station in markets is being done all the time today and will be done in the future. You can do it with a lot less investment capital, more chance to survive. You can find a niche in the marketplace with your programming and your promotions—that is, if you can find it.

Right now, independent TV stations—STVs—are doing very well. If I can recall a little bit, back in the late 1940's and the early 1950's, when television was just starting out, we ended up with one or two or three television stations in each marketplace. It cost a very nominal fee to get into the television business in those days—maybe \$250,000 or \$300,000 for your transmitter and some of your equipment. Most of those stations lost money for a number of years, until all of a sudden in the late 1950's and the 1960's they started making very good profits. The networks started coming up very strong and, as you saw, the road came into the 1980's.

The advent of cable and direct broadcast, satelliting and some advertising supported, some supported by subscriptions from consumers, gave lots of choices to the advertising to viewers. TV stations are less in number than radio stations. They therefore carry a higher multiple than radio stations.

It is much easier to buy a radio and TV station than newspapers and I believe in most cases the return on investment is greater in the broadcast industry. In most communities in the United States you have really one newspaper or two which operate under a joint arrangement with everything—what I call the business side of the newspaper business and have two editorial voices, whereas you usually have a minimum of 3 TV stations, 8 radio stations, cable, with 12 to 50 channels, out-of-home media, shoppers, skywriting, and any other way of talking.

The scarcity of newspapers today is really disabled by the economics of today's marketplace—the labor, the equipment, the technology, the competition—which all enter into your ability to make a profit and to stay in business. There is no doubt it is much harder and more expensive to start or buy a newspaper versus a broadcast operation.

Media properties usually go to a multiple of operating profits and you have heard per subscriber and per everything else, but usually what happens is you look at a media, whether it is newspaper or broadcast, and look at the predepreciation, preinterest and

you look at what we call the operating profit cash flow number. Usually that is how they are sold.

In the newspapers they go anywhere from a low of 10 to a high of 40.

The CHAIRMAN. Let me ask you something about those figures. If you are an entrepreneur and you would like to make money in communications, why would you buy newspapers instead of radio stations?

Mr. ELLER. Well, again it is the ability to have a franchise in a marketplace and have not a monopoly but in essence you are the only newspaper in town.

The CHAIRMAN. Yes, but your return is still worse than with a radio station, of which eight or nine exist in the town.

Mr. ELLER. Yes, sure. But you look at the ability that you can improve on that number and you can get a certain share of your advertising dollars. Plus, you have the ability that you are competing with yourself in getting newspaper advertising but you are not competing with the other media. But again, it is the ability that you think you can make more money that way, and you might.

The CHAIRMAN. With all of that, by and large the evidence does not prove that that happens.

Mr. ELLER. Sure, but you can only own seven radio stations, AM and FM, so you reach the point where you get your fill of radio stations. If you are a large company, you go after other media because they are compatible in selling. That is just what you look at.

Again, TV stations are in the area of 8 to 12 times a multiple of operating profit. Radio stations are somewhere in the neighborhood of 4 to 10. These are rough parameters and many other factors are involved in the negotiation of final prices.

In the real world, the media business is, in general, very competitive. You not only are competing with media in the same area but with all media in the marketplace for your share of ad dollars.

I would just like to say a few things about costs of newspapers versus network television stations or independent television stations in some marketplace that might be interesting to you. For example, today it was announced that Jacksonville newspaper was purchased by Bill Morris, who is an independent operator of a privately held company in Augusta, Ga., that owns about 10 newspapers.

It was a bid situation. The newspaper reported that it was going in the neighborhood of \$2 million for the Jacksonville newspaper. Recently, about a year ago, a network-affiliated station in Jacksonville, I believe the NBC affiliate, was sold for \$18 million. So that gives you an idea of the difference in cost.

For example, in a situation I was involved in in Nashville, Tenn., a number of years back, the afternoon paper was sold for approximately \$25 million. The morning paper was sold for \$50 million. So the two newspapers, which happened to be operating under a joint operating agreement, sold for \$75 million. And recently a Nashville television station was sold by National General for approximately \$35 million, so again seeing the comparison between the two.

Fort Wayne, Ind., the TV station there would run in the neighborhood of \$5 to \$8 million for a UHF network-affiliated station and the Fort Wayne paper was sold to the Knight organization for

\$40 million, again showing you the scarcity situation really on the newspaper side and not on the broadcast side.

For example, San Francisco is a different situation. That TV station was going for about \$180 million and you do not know what value would be put on the newspaper publication there. Those are just some examples of different situations that do come up.

If there are any other questions you might have, I would be glad to answer.

The CHAIRMAN. Mr. Eller, I do not think there are. I am afraid that despite the conclusive information the three of you presented there will still be those who will make the argument that anybody can start a newspaper. I think that argument is made by people who will not be disabused by the facts. They do not care.

What they really want is the Government to regulate and license radio and television, despite the fact that the justification for doing so has long since passed. I think to a degree some of them wish that the Government owned television and newspapers and radio. But, short of that, licensing them is the next best thing.

But at least the three of you presented a foundation today that I think cannot be rebutted. You can argue all you want philosophically, but it is hard to argue with these facts. The most compelling response to the argument that anybody who wants to can start a newspaper is that there has been no daily newspaper started in a major market in this country since the end of World War II.

I do not know how you argue with that fact.

Mr. ELLER. It is economics.

The CHAIRMAN. I understand it.

I have no other questions, Mr. Eller. Thank you for concluding our testimony today.

The committee will stand in adjournment.

[Whereupon, at 11:44 a.m., the committee adjourned.]